Great North Road Solar and Biodiversity Park

Environmental Statement

Volume 2 – Chapters

Chapter 17 – Agricultural Land

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Contents

17.1 INTRODUCTION

1 Elements Green Trent Ltd (''the Applicant'') is bringing forward a Development Consent Order (DCO) application for the proposed development of the Great North Road (GNR) Solar and Biodiversity Park (''the Development'').

2 The Development is a proposed solar photovoltaic (PV) electricity generating facility which lies within the district of Newark and Sherwood and the county of Nottinghamshire.

17.2 THE DEVELOPMENT

3 The Development would be located to the northwest of Newark, in the Newark and Sherwood district of Nottinghamshire, East Midlands. The Development would be within an area bound by the Order Limits. The Order Limits are to the west of the A1, north of the A617, east of Eakring, and south of Egmanton, to the north and northwest of Staythorpe.

4 The Order Limits are mostly across agricultural land. The majority of the land is used for arable farming activities, but there are some areas of grassland farming. Across the District and County the agricultural land quality is generally high, with c.50% of agricultural land falling within the "Best and Most Versatile" (BMV) category under the Agricultural Land Classification (ALC).

5 The Development is described by ES Chapter 5, Development Description, [EN010162/APP/6.2.5], and briefly summarised here. The Development essentially consists of discrete land parcels proposed to be occupied by solar PV panels and associated infrastructure (Work no. 1), connected by cable route areas (Work no. 2). Up to 4 intermediate substations (Work no. 4) will be spaced around the solar areas, and a Battery Energy Storage System (BESS; Work no. 5a) and 400 kV Compound (Work no. 5b) will collate the electrical energy and step up the voltage before cabling it to the National Grid Staythorpe Substation (Work no. 6), likely via the Consented Staythorpe BESS (Work no. 7). Road works (Work no. 8; access) will be undertaken, principally to create passing places and create or upgrade access points. Other areas within the Order Limits are identified for mitigation/enhancement (Work no. 3). The Work Areas are shown on ES Figure 5.1 [EN010162/APP/6.3.5.1] and a summary of mitigation/enhancement measures is shown on ES Figure 5.2 [EN010162/APP/6.3.5.2].

17.3 PURPOSE

6 This chapter of the Environmental Statement (ES) assesses the likely significant effect of the Development on agricultural land. The assessment encompasses the effects on agricultural land as a resource, on soils as a resource, and on land based rural businesses as an economic activity and for the products they provide in terms of food, non-food produce and environmental benefits.

7 The agricultural assessment has been undertaken by Kernon Countryside Consultants (KCC) and the Agricultural Land Classification (ALC) and soil survey has been undertaken by Amet Property Ltd.

8 The Chapter is supported by the following figures (provided in Volume 3 of this ES):

- Figures 17.1 [EN010162/APP/6.3.17.1] NE, NW, SE, SW (4 plans) showing the ALC results with the extent of Works Area 1 crosshatched ;
- Figure 17.2 [EN010162/APP/6.3.17.2] (1 plan) showing the provisional ALC for a wide area between Nottingham and Lincoln, with the Order Limits marked on;
- Figure 17.3 [EN010162/APP/6.3.17.3] (1 plan) showing the Likelihood of Best and Most Versatile (BMV) land for the Order Limits and Works Area 1;
- Figure 17.4 [EN010162/APP/6.3.17.4] (1 plan) showing the Likelihood of BMV map for the wide area between Nottingham and Lincoln;
- Figures 17.5 [EN010162/APP/6.3.17.5] NE, NW, SE and SW (8 plans) showing the results of the ALC surveys and the Works Areas;
- Figures 17.6 [EN010162/APP/6.3.17.6] (2 plans) showing the results of the ALC and the Works Plan for Work Areas 5a, 5b and 7; and
- Figure 17.7 [EN010162/APP/6.3.17.7] (1 plan) showing landownership within the Order Limits.

9 This chapter is supported by the following Technical Appendices (TAs; provided in Volume 4 of this ES):

- TA A17.1: ALC of the site [EN010162/APP/6.4.17.1];
- TA A17.2: outline Soil Management Plan (oSMP) [EN010162/APP/6.4.17.2]; and
- TA A17.3: Farm Reports [EN010162/APP/6.4.17.3].

10 In addition, this chapter provides a number of inserts and photographs. The inserts draw from the Figures set out in the list above reproduced in Volume 3 of the ES, together with some extracts from the ALC Plans attached to the ALC results set out in TA A17.1 [EN010162/APP/6.4.17.1].

17.4 CONSULTATION

11 Table 17.1 provides a summary of the consultation responses to the Scoping Report and the Preliminary Environmental Information Report (PEIR) (“S42 Response”) in respect of agricultural and soil matters. The table sets out a summary of the matters raised and identifies how and where they have been addressed in this Chapter and ES.

Table 17.1 Consultation Summary

Consultee	Type and Date	Summary of Consultation Response	How This Is Addressed in the ES
PINS	Scoping Opinion	The potential impacts on land use and food production should be assessed.	Data on land use and agricultural production, including for food, has been collected by farm interviews and walk-over surveys, (see TA A17.3 [EN010162/APP/6.4.17.3]) and the results and effects are fully assessed in this Chapter (see Section 17.8).
Natural England (NE)	Response to Scoping Report 6th December 2024	Requested an ALC [Agricultural Land Classification] of the Cable Route Corridor unless good reason exists.	The cable areas (Work no. 2) has been refined and ALC surveys have been completed and are reported in TA A17.1 [EN010162/APP/6.4.17.1].
Natural England	S42 Response 20th February 2025	It is considered essential to identify land quality and soils of all areas, and NE advise the CRC is included.	The cable areas (Work no. 2) has been refined and has now been assessed, and is reported in this Chapter at section 17.7.
Natural England	S42 Response 20th February 2025	Upon completion of the ALC NE recommend that further consideration should be given to minimising effects on agricultural land.	Further consideration has been given and is reported in this Chapter at section 17.8.
Natural England	S42 Response 20th February 2025	Consideration should be given to avoiding land of BMV [Best and Most Versatile] quality where intrusive biodiversity	Intrusive enhancement works in BMV areas (i.e. works that might affect land quality) have been minimised so far as possible, as reflected in the layout of the Development, shown in

Consultee	Type and Date	Summary of Consultation Response	How This Is Addressed in the ES
		enhancement is proposed.	Figure 5.1 [EN010162/APP/6.3.5.1]. Vegetation proposals such as hedges and trees do not affect the soil resource and have therefore been designed for maximum benefit (such as visual screening) rather than BMV avoidance.
Natural England	S42 Response 20th February 2025	The ALC results should include a breakdown of permanent and temporary land take by ALC grade.	This is provided in this Chapter at section 17.8.
Carlton on Trent Parish Council	Stage 2 Consultation Response (undated)	Concern is raised about the loss of food production and the use of BMV land.	This is considered and addressed in this Chapter at section 17.8.
Norwell and Norwell Woodhouse Parish Council	Stage 2 Consultation Response, February 2025	Concern is raised in 5.6 that land quality will be "bumped down".	The ALC grading system has been followed, and the full survey results are available in TA A17.1 [EN010162/APP/6.4.17.1] for scrutiny. The ALC methodology is robust, and land quality cannot be "bumped down".
Norwell and Norwell Woodhouse Parish Council	Stage 2 Consultation Response, February 2025	Concern is raised about the use of BMV land generally.	The land quality has been assessed and the potential effects are addressed in this Chapter at section 17.8.
Nottingham County Council	Pre-application consultation response, 20th February 2025	Concern is raised about potential impacts on farm businesses.	The surveys of farm businesses have been completed (see TA A17.3 [EN010162/APP/6.4.17.3]) and are considered in this Chapter at section 17.8.

Consultee	Type and Date	Summary of Consultation Response	How This Is Addressed in the ES
Newark and Sherwood District Council	S42 Response 20th February 2025	Consider that land quality and potential effects on soils must be considered carefully, and welcomes the proposed outline Soil Management Plan [oSMP].	These matters are considered in this Chapter and an oSMP is provided in TA A17.2 [EN010162/APP/6.4.17.2].
Nottingham Wildlife Trust	PEIR Consultation Response 5th February 2025	Express a preference for low intensity grazing with a biodiversity focus.	This is reviewed in the ES Chapter 8, Ecology and Biodiversity [EN010162/APP/6.2.8].
Sutton on Trent Parish Council	Aspbury Planning response of 18th February 2025	Requires justification for the use of BMV land, and express concern that grazing will be of low quality.	The need to use BMV land is considered in this Chapter. Grazing uses in and around the panels are considered. The assessment is set out at section 17.8.
North Muskham Parish Council	Response to Phase 2 Consultation, 17th February 2025	Concern is raised that sheep farming in the UK is in decline, and may not be feasible, and grass growth may be poor.	The potential for the land under and around the panels to be used for grazing sheep is reviewed and assessed in this Chapter at section 17.8.

17.5 ASSESSMENT APPROACH

17.5.1 Methodology

12 The methodology follows that set out in the Scoping Report and PEIR, but has been modified in part in response to comments made in the consultation responses. The key receptors considered in this Chapter:

- Agricultural land;
- Soils;
- Agricultural and land-based rural businesses.

17.5.1.1 Agricultural Land

13 Agricultural land quality is measured by the Agricultural Land Classification (ALC) system. This methodology was devised by the Ministry of Agriculture, Fisheries and Food (MAFF) in the 1970s. It is described in Natural England's Technical Information Note TIN049[1]. The classification considers the long-term physical limitations of land for agricultural use, especially the climate, site and soil characteristics, and the important interactions between them. The methodology was last revised by MAFF in 1988[2].

14 To determine land quality, it is necessary for a competent soil surveyor to examine soils using a soil auger sampling on a regular 100m grid (thereby eliminating potential bias in sampling) down to, where possible, 1.2m depth. Periodically pits should be dug to better describe soil profiles and to enable measurement of stoniness.

15 A detailed ALC survey has been completed. Field survey was undertaken between May 2022 and October 2024. In total 1,690 hectares (ha) of agricultural land has been classified within the Order Limits, and is reported in this Chapter.

16 The sampling records the soil type and texture, colour, the depth of any slowly permeable layer and the presence of mottles and their colour, stoniness, the depth of soil horizons etc. Each sample point is then assessed against the climatic variables for the area and an ALC grade is then determined. These are plotted and a soil surveyor then uses professional judgement to estimate the distribution and patterns of ALC by grade, plotting this on a plan and then measuring the areas.

17 The detailed ALC has been completed in full accord with the ALC Guidelines. The ALC is reported in TA A17.1 [EN010162/APP/6.4.17.1].

17.5.1.2 Soils

18 Soil type is recorded as part of the ALC at each auger sample point, including soil texture, depth, stoniness etc. The soil information has been used to inform the appropriate assessment of potential impacts. Clayey soils are most susceptible to structural damage if handled when wet or saturated because of their small particle size, whereas sandy soils are generally more resilient to being worked.

19 The soil survey has informed the outline Soil Management Plan (oSMP), which is at TA A17.2 [EN010162/APP/6.4.17.2]. The oSMP sets out the principles of soil assessment, to determine whether soils are suitable for being handled. It sets out the principles of handling soils for the construction and decommissioning works. This will be used as the basis for a SMP to be prepared at detailed design stage, pre-construction, and secured via DCO Requirement.

[1] Natural England Technical Information Note TIN049 "Protecting the Best and Most Versatile agricultural land", edition 2 (2012)
[2] Agricultural Land Classification of England and Wales: revised guidelines and criteria for grading the quality of agricultural land, MAFF (1988)

17.5.1.3 Farm and Economic Impacts

20 The effects on farm businesses and on the wider land-based rural economy have been assessed based on information gathered from discussions with landowners and occupiers, and from observations made walking the farmland within the Order Limits (excluding Work no. 2, cables, on the basis that these works would be temporary and short-term only).

21 The potential significant effects on each farm have been reported in summary form, and are set out at TA A17.3 [EN010162/APP/6.4.17.3]. The factual information used in these reports has come from interviews with landowners and the information collected has been checked and validated where possible.

22 Farming enterprises are prone to change. Farming enterprises are businesses, run by people, and must adapt to changes caused by weather, commodity prices, labour availability, personal choice, diseases or Government incentives or regulations. Changes can be rapid, such as the changes in input and commodity prices following the invasion of Ukraine. The assessment of farm impacts has endeavoured to take a longer-term view of the type of farming operation likely to be operated, rather than a detailed snapshot at the time of assessment.

23 The assessment reviews long-term cropping and stocking, and the types of produce grown or livestock reared. It reviews direct and indirect labour and assesses the effects on farming enterprises and related economic implications.

24 The assessment also considers the wider effects of the Development on the rural economy, including on food production, evaluating the effects on a District, County and UK basis.

17.5.2 Assessment of Significance

25 The significance of effects is based on a combination of the magnitude of a particular impact and the sensitivity of the receptor to change. Accordingly a high magnitude impact on a receptor that is of low sensitivity may not be significant in Environmental Assessment terms, whereas a medium magnitude impact on a receptor that is of high sensitivity may be significant.

26 The methodology used in this assessment follows that set out in the Scoping Report and in the PEIR. The comments of Natural England (NE) in response to consultation on the PEIR (20th February 2025, as summarised in Table 17.1) have been noted. NE advise that any loss of 20 ha or more of BMV land should be considered as having a high magnitude within the ES. The assessment of significance in this Chapter has retained the tables set out in the Scoping Report and PEIR. The tables result in any loss of 20 ha or more of BMV being identified as a major adverse effect, and accordingly significant in EA terms. Any loss of between 5 and 20 ha of BMV land is a medium magnitude impact resulting in a moderate adverse effect, which is significant in EIA terms. The methodology achieves the recognition for the loss of BMV requested by Natural England.

27 Whilst the loss of 5 ha or more of BMV land is therefore identified as significant in EIA terms, the loss of BMV should be considered in context.

Land of BMV quality is not rare. Such land, as set out in Natural England's TIN049 ([1], ibid) accounts for an estimated 42% of agricultural land in England. The Utilised Agricultural Area of England in 2024 was 8.7 million hectares[3], such that about 3.7 million ha of BMV land is currently utilised for agricultural use. As is examined in this Chapter, land of BMV quality is not a rare resource locally, accounting for c. 50% of all agricultural land in the District and County.

28 Policy places no constraint on the use of land of poorer quality. For this assessment, following the IEMA Guide, Subgrade 3b "moderate quality" land is considered to be of medium sensitivity, and land of Grades 4 "poor" and 5 "very poor" are considered to be of low sensitivity.

29 The IEMA Guide[4] provides an assessment of the sensitivity of soils to being damaged by physical works. The sensitivity is based on soil type in different climatic regions, for example, high clay soils where the Field Capacity Days exceeds 150 being categorised as high sensitivity.

30 As set out in the ALC Report (TA A17.1 [EN010162/APP/6.4.17.1]) the Field Capacity Days (FCD) for the purposes of ALC across the Order Limits varies between 112 and 127 days per year. These are the days when soils are replete with water, i.e. saturated. Under the IEMA Guide no soils in this climatic area are therefore of high sensitivity, so that no soil within the Order Limits is of higher than medium sensitivity.

31 The IEMA Guide does not provide sensitivity definitions for farm businesses, although effects are described in paragraph 8.3.3 of the IEMA Guide. The criteria in Tables 17.2 to 17.4 are based on professional judgement. The methodology considers farm businesses to be generally resilient to change. Farm businesses are continually adapting to changes, such as from weather, commodity prices, availability of labour, Government requirements and incentives. Consequently farm businesses are of no higher than medium sensitivity.

32 The sensitivity of receptors will be measured as set out in Table 17.2.

Table 17.2: Methodology for Determining Receptor Sensitivity

Sensitivity	ALC/biomass production	Sensitivity of topsoil and subsoil	Agricultural businesses
High	Land of ALC Grades 1, 2 and subgrade 3a	No soils are of high sensitivity in this climatic area because the FCD is <150.	No farm businesses are considered to be of high sensitivity.
Medium	Land of ALC Subgrade 3b	High clay soils where the FCD is <150, or medium textured soils	Full-time businesses, and farm businesses where the location of land is

[3] Department for Environment, Food and Rural Affairs "Agricultural Land Use in England at 1 June 2024" (26 September 2024)
[4] Institute of Environmental Management and Assessment (IEMA) Guide "A New Perspective on Land and Soil in Environmental Impact Assessment" (2022)

Sensitivity	ALC/biomass production	Sensitivity of topsoil and subsoil	Agricultural businesses
		where the FCD is <225.	particularly important such as dairy farms.
Low	Land of ALC Grades 4 and 5	Soils with a high sand fraction where the FCD is <225.	Part-time farms or farms with low sensitivity to change, e.g. arable land or land held on short-term arrangements.
Negligible	Land of ALC Grades 4 and 5 with only indirect links	No soils are of negligible sensitivity.	Agricultural land that is not farmed or does not form part of a farm business.

*Field Capacity Days: Days When the Soil is Replete with Water

33 National policy (National Policy Statement EN-3; see Section 17.4.2) advises that while land type should not be a predominating factor, land of lower ALC grade (non-BMV) should be preferred where possible. The change of use of BMV land to solar development does have implications on the ability to farm the land for arable uses, however these effects are not considered to be a permanent loss of land within a wider agricultural use. While the land may be temporarily taken out of arable rotation (if it is currently in arable production), the impact on the land is low. Solar projects typically involve minimal ground disturbance and can provide a valuable break from intensive agricultural practices associated with arable rotation.

34 This 'fallow' (resting) period allows the soil to recover from the constant cultivation, chemical inputs, and compaction associated with modern farming practices. As a result, over the course of the operational life of the Development (up to a maximum of 40 years) evidence would suggest that soil health indicators, e.g., organic matter content, soil nutrients, worm count, would improve under grassland, increasing its resilience and capacity for future agricultural use. This is recognised in national policy (National Policy Statement EN-3: section 2.10.89) which notes that "*solar farms have the potential to increase the biodiversity value of a site, especially if the land was previously intensively managed. In some instances this can result in significant benefits and enhancements….*".

35 The magnitude of impacts on agricultural land and soils will be assessed as per the methodology set out in Table 17.3. The determination of "loss" will draw on the definition in the IEMA Guide (3, ibid). This defines "loss" for assessing magnitude as "*permanent, irreversible loss of one or more soil functions or soil volumes (including permanent sealing or land quality downgrading)*". It identifies that "*temporary developments can result in a permanent impact if resulting disturbance or land use change causes permanent damage to soils*". As noted in Table 17.3, IEMA define "*temporary, reversible loss of soil related features*" as a Low magnitude of impact.

36 The IEMA Guide does not provide magnitude definitions for farm businesses, so professional judgement has been applied. The methodology in Table 17.3 sets out that only farms that will be terminated are considered to experience a major adverse impact, with most changes either moderate or minor. There can be benefits for farms as a consequence of the proposals, so impacts can be both adverse and beneficial.

Table 17.3: Methodology for Determining Magnitude of Change

Magnitude of Impact	**Definition**	
	Effects on Agricultural Land (Soils)	**Effects on Farm Businesses (agricultural businesses)**
High	The Scheme would directly lead to the loss (including permanent sealing or land quality downgrading) of over 20 hectares of soil-related features; or potential for improvement in one or more soil functions over an area of more than 20 ha.	The impact of development would render a full-time agricultural business non-viable, or would render a non-viable business viable.
Medium	The Scheme would directly lead to the loss (including permanent sealing or land quality downgrading) over an area of between 5 and 20 hectares of soil-related features; or potential for improvement in one or more soil functions over an area of between 5 ha and 20 ha.	The impact of the development would require significant changes in the day-to-day management of a full-time agricultural business, or closure of a part-time agricultural business. Loss of buildings or impacts on drainage or water supplies affecting the potential for at least 5 ha of adjacent land to be farmed fully. Significant benefits in the day-to-day operation of a farm business.
Low	The Scheme would directly lead to the loss (including permanent sealing or land quality downgrading) of less than 5 hectares of soil-related functions; or potential for improvement in one or more soil functions over an area of less than 5 ha; or temporary reversible loss or improvements of soil related features.	Land take would require only minor changes in the day-to-day management / structure of a full-time agricultural business or land take would have a significant effect on a part-time business. Minor effects, direct or indirect, on surrounding land beyond the boundaries of the Site. Minor benefits to the day-to-day operation of a farm business.
Negligible	No discernible loss or reduction or improvement of soil functions or volumes.	Land take would require only negligible changes in the day-to-day management of a full-

Magnitude of Impact	Definition	
	Effects on Agricultural Land (Soils)	**Effects on Farm Businesses (agricultural businesses)**
		time agricultural business or land take would require only minor changes to a part-time farm business, adverse or beneficial.

37 The assessment of the significance of effects will be determined based on the matrix in Table 17.4 below. Typically, effects that are identified as being Major or Moderate are considered to be significant in terms of the EIA Regulations, although the assessment of this would be informed by professional judgement.

38 Effects can be adverse or beneficial. In the assessment the impacts are considered to be of national, regional or local significance. Land of BMV quality is considered a receptor of national significance, whereas soils and farm businesses, being more common and more resilient, are considered to be receptors of local significance.

39 Impacts can also be temporary or permanent. The IEMA Guide does not distinguish between short or long term temporary effects, only between temporary and permanent effects. Accordingly all reversible impacts are described as temporary effects.

40 The assessment of significance is set out in Table 17.4. Those effects stated as moderate or major (highlighted in green) are significant in EIA terms.

Table 17.4: Methodology for Determining Significance

		Sensitivity of Receptor / Receiving Environment to Change / Impact			
		High	**Medium**	**Low**	**Negligible**
Magnitude of Impact	**High**	Major	Moderate	Minor	Negligible
	Medium	Moderate	Minor	Minor	Negligible
	Low	Minor	Minor	Negligible	Negligible
	Negligible	Negligible	Negligible	Negligible	Negligible

17.6 LEGISLATIVE AND POLICY FRAMEWORK

17.6.1 Legislation

41 There is no legislation of direct relevance to the assessment.

17.6.2 National Planning Policy

42 Overarching National Policy Statement for Energy (EN-1) (November 2023)[5] paragraph 5.11.3 notes that undeveloped greenfield land may need to be used for many forms of energy infrastructure. Paragraph 5.11.12 advises that the use of BMV land should be minimised, with a preference for use of poorer quality land. Paragraph 5.1.13 advises that applicants should seek to minimise effects on soils.

43 The National Policy Statement for Renewable Energy Infrastructure NPS EN-3 (November 2023)[6] section 2.10 "Solar Photovoltaic Generation" sets out at paragraph 2.10.29 that while land type should not be a predominating factor in determining the suitability of the site's location for renewable energy development, where the use of agricultural land has been shown to be necessary, poorer quality land should be preferred to higher quality land, avoiding BMV agricultural land where possible. Such land is defined as land in Grades 1, 2 and 3a of the Agricultural Land Classification (2, ibid).

44 Further advice is provided as follows:

- Biodiversity relative to intensive agricultural use (paragraph 2.10.89): noting that solar farms have the potential to increase the biodiversity value of a site, especially if the land was previously intensively managed; and
- Mitigation and soil preservation (paragraph 2.10.127): cross-referencing Defra's Construction Code of Practice for the Sustainable use of Soils (2009)[7] and advising on mitigation measures to minimise soil carbon loss and maximise soil biodiversity.

45 Paragraph 2.10.145 advises that the Secretary of State ('SoS') should take into account the economic and other benefits of BMV agricultural land. The SoS should ensure that the applicant has put forward appropriate mitigation measures to minimise the impacts on soils or soil resources.

46 NPS EN-5[8] paragraph 2.9.25 requires a commitment to mitigate the potential effects of undergrounding works, requiring handling of soils, backfilling and return to the underlying ALC grade.

47 On the 24th April 2025 DESNZ issued an Open Consultation on draft updates to NPS EN-1, NPS EN-3 and NPS EN-5, which closed on the 29th May 2025.

[5] Department for Energy and Net Zero (2024), Overarching National Policy Statement for Energy ('EN-1', 2024)
[6] Department for Energy and Net Zero (2024), National Policy Statement on Renewable Energy Infrastructure ('EN-3', 2024)
[7] Department for Environment, Food and Rural Affairs (2009), Construction Code of Practice for the Sustainable Use of Soils on Construction Sites
[8] Department for Energy and Net Zero (2024), National Policy Statement for Electricity Networks Infrastructure (EN-5, 2024)

The consultation drafts[9] are not adopted at the time of writing, but as drafted do not materially change policy with respect to agricultural land.

48 The National Planning Policy Framework ('NPPF') (December 2024)[10], sets out in paragraph 187(b) that the economic and other benefits of BMV agricultural land should be recognised in planning decisions.

17.6.3 The Development Plan

49 Of Newark and Sherwood District Council's policies, neither policy DM4 of the Allocations and Development Management DPD (July 2013)[11] nor Core Policy 10 of the Amended Core Strategy[12] identify land quality in their factors for assessing applications for renewable energy and climate change. DM4 is the primary policy governing renewable and low carbon energy, but agricultural land is not one of the seven listed factors.

17.6.4 Limitations to the Assessment

50 There are no significant limitations to this assessment.

17.7 BASELINE CONDITIONS

17.7.1 Site Description and Context

51 The Site mostly comprises agricultural land in farming use. To accord with the assessment methodology the baseline conditions are described in terms of:

- Agricultural land quality;
- Soils and soil type; and
- Local and wider agricultural circumstances.

17.7.2 Agricultural Land Quality

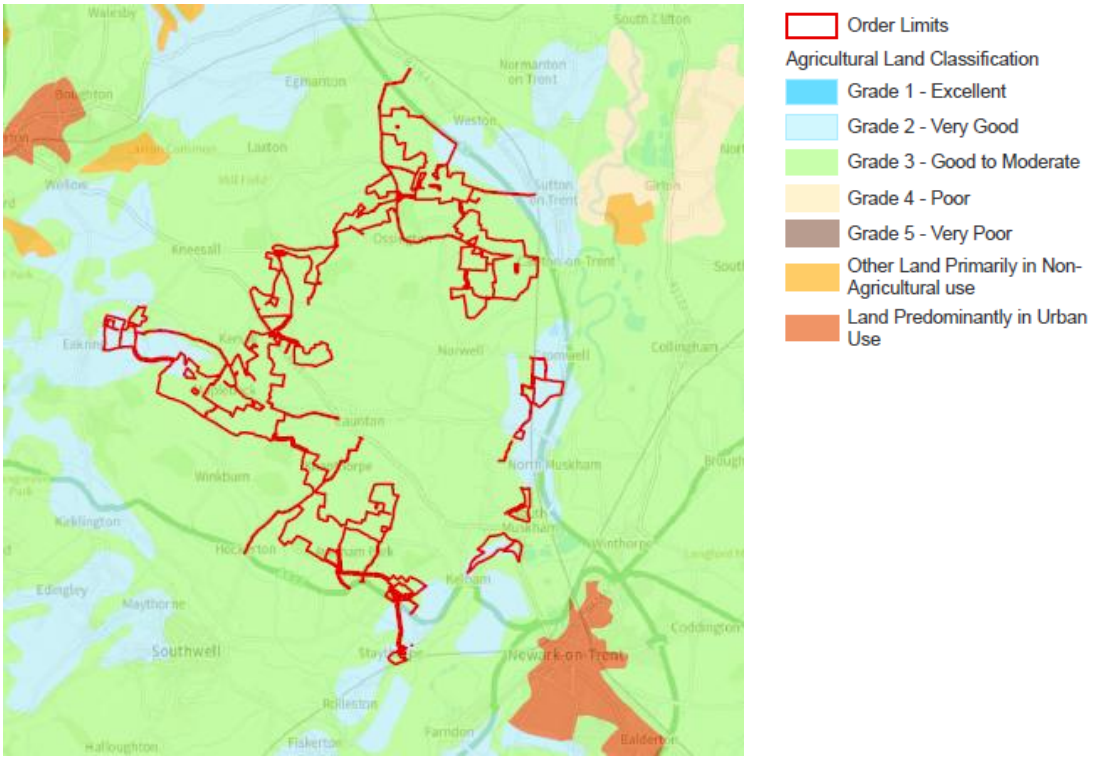
52 Agricultural land quality is measured under the ALC system. This was devised by MAFF and was first plotted out at a scale of one inch to one mile, between 1967 and 1974. The maps preceded the subdivision of Grade 3. These maps are out of print, but there is a 1:250,000 scale available for strategic purposes. This was digitised in 2017. These maps are for use at a strategic level only, and are not for site-specific use. Nevertheless they are the only maps available that show ALC distribution. See Natural England's TIN049 (1, ibid).

[9] Department for Energy and Net Zero (2024), Open consultation: Planning for new energy infrastructure: 2025 revisions to National Policy Statements https://www.gov.uk/government/consultations/planning-for-new-energy-infrastructure-2025-revisions-to-national-policy-statements [accessed on 23/05/2025].
[10] Ministry of Housing, Communities and Local Government (formerly the Department for Levelling Up, Housing and Communities) (2024) National Planning Policy Framework (NPPF)
[11] Newark and Sherwood District Council, Local Development Framework, Allocations and Development Management Development Plan Document (July 2013)
[12] Newark and Sherwood District Council, Amended Core Strategy (March 2019)

53 The ALC methodology was amended in 1988 but the original ALC maps were not updated. They are, therefore, to be used only cautiously and they cannot be used for site specific assessment.

54 The general area is shown on Figure 17.2 [EN010162/APP/6.3.17.2], with an extract shown on Insert 17.1. The provisional map identifies the Order Limits as mostly undifferentiated Grade 3, which is good to moderate quality agricultural land. The scale of mapping, and the lack of survey data underpinning it coupled with the map's production under a now-superseded ALC methodology means that the map is not sufficiently accurate for use in assessment of individual fields or development sites and should not be used other than as general guidance, as advised in TIN049. Nevertheless this is the only mapping available that shows land quality expectations. Insert 17.1 provides an extract from Figure 17.1 [EN010162/APP/6.3.17.1] and identifies that the Order Limits lie in the poorest quality available, with only small parts of the Order Limits (at the eastern and western edges) identified as falling into ALC Grade 2.

Insert 17.1: Provisional ALC (extract from Figure 17.2 [EN010162/APP/6.3.17.2]

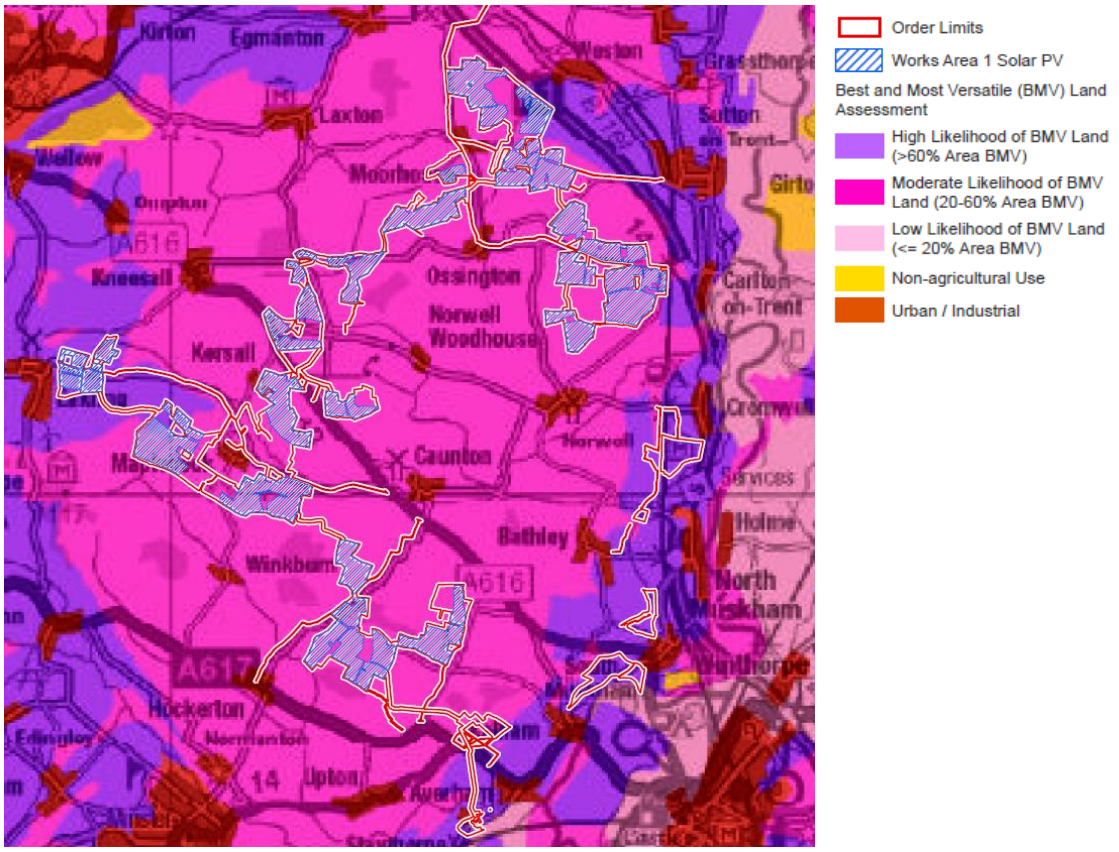


55 Assessment of the wider area shows that land in the Order Limits, being mostly undifferentiated Grade 3, is generally the poorest available in the wider area. Figure 17.2 [EN010162/APP/6.3.17.2] shows the provisional land quality in an area between Nottingham and Lincoln. There are some modest areas to the northeast adjacent to the River Trent shown as Grade 4, but the poorest quality land shown widely is that of undifferentiated Grade 3.

56 In 2017 Natural England produced a series of maps, also at 1:250,000 scale, which divide England into three categories according to the likelihood of land being of BMV quality. The highest category estimates that 60% or more of land in an area will be BMV, and the lowest category estimates that less than 20% of land in an area will be BMV.

57 The BMV map is reproduced in Figure 17.3 [EN010162/APP/6.3.17.3] and Figure 17.4 [EN010162/APP/6.3.17.4]. These shows that, with the exception of the areas to the east, most of the land within the Order Limits falls into the moderate likelihood of BMV, meaning that between 20 and 60% of the area is predicted to be BMV.

Insert 17.2: Likelihood of BMV (extract from Figure 17.3 [EN010162/APP/6.3.17.3)



58 The regional context is shown on Figure 17.4 [EN010162/APP/6.3.17.4]. The wider area, between Nottingham and Lincoln, shows that west of the River Trent the land generally falls into the moderate (20 – 60% area BMV) or high (>60% area BMV) category. Considering the land west of the River Trent, therefore, the Development, which lies mostly in an area of moderate likelihood of BMV, lies in an area predicted to be of the poorest quality proportionately in this area.

59 These maps do not provide site-specific data. Therefore, a detailed ALC has been carried out.

60 As described in the ALC report (TA A17.1 [EN010162/APP/6.4.17.1]), the climate across the Order Limits provides no limitation to ALC grade. This means that, in the absence of any other limiting factor, the land quality is not limited (i.e., could all be Grade 1). Therefore, the site surveys identify if there are any other limiting factors, notably site and soil and the interaction between these factors.

61 Stoniness was recorded across the Order Limits at between 5% and 40% topsoil stone content, mostly small (2-6 cm) and very small (less than 2 cm). These stones influence the droughtiness of soils, because the stones do not hold water and there is therefore reduced water availability for plant uptake. Stoniness in itself does not however limit the ALC grade in this area, although it can influence farming practices and crop choices.

62 Gradient can limit ALC grade, but no slopes greater than 6° were identified in the Order Limits, and therefore slope and micro-relief do not impose a limitation to land quality (under the ALC (2, ibid) slopes greater than 7° cannot be BMV).

63 The ALC survey found that the soils to the north and west are largely reddish clay loam or clay topsoils – occasionally slightly silty over slowly permeable gleyed subsoils. Most of the subsoils are reddish with some being very red and resistant to gleying. Gleying is a normally blush or grey coloration that develops in soils that are subject to periodic or permanent waterlogging and anaerobic conditions.

64 The soils to the east have more variability with topsoils recorded as sandy clay loam, medium sandy loam and loamy medium sand over subsoils that are recorded as sandy loam, loamy sand and sand. Colours vary quite significantly with areas of reddish and brown sandy soils and areas where the sands are grey or pale having been affected by groundwater. The biggest variation across the sandy soils is the amount of very small and small stones found throughout the topsoil and subsoil which has a significant impact on droughtiness calculations.

65 The ALC of the area therefore has been determined by the interaction of climate with soil type, and in particular the wetness class and topsoil texture against Table 6 in the ALC guidelines. Wetness was the most limiting factor for a large proportion of the land within the Order Limits, with the clay soils having a gleyed horizon (discoloration indicative of waterlogging) from less than 40 cm. The land quality was also influenced by the natural calcareous nature of many of the soils surveyed, which increases the ALC grade.

66 Wetness was the principal limitation for soils across the western part of the Order Limits, with large areas falling into ALC Subgrade 3b.

67 On the sandier soils, especially in the east, the principal limitation was droughtiness, especially where subsoils were extremely stoney or made up of coarse sand.

68 The agricultural land quality of the Order Limits has been recorded. The results are set out in TA A17.1 [EN010162/APP/6.4.17.1].

Table 17.5: ALC Results (rounded to nearest whole hectare)

ALC Grade	Description	Area (ha)	Proportion (%)
1	Excellent	0	0.0
2	Very good	149	8.5
3a	Good	944	53.5
3b	Moderate	596	33.8
4	Poor	1	0.0
5	Very poor	0	0.0
NA	Non-agricultural / Not surveyed (road or woodland)	75	4.2
Total		**1,765**	**100.0**

69 The ALC plans are set out at Figures A17.1.1 to A17.1.1.7 (in TA A17.1 [EN010162/APP/6.4.17.1]). These are reproduced in extracts in this Chapter, for the purposes of description, and photograph locations referred to have been added to the ALC plan extracts. Reference is made to Blocks, as used in the ALC (Appendix 17.1).

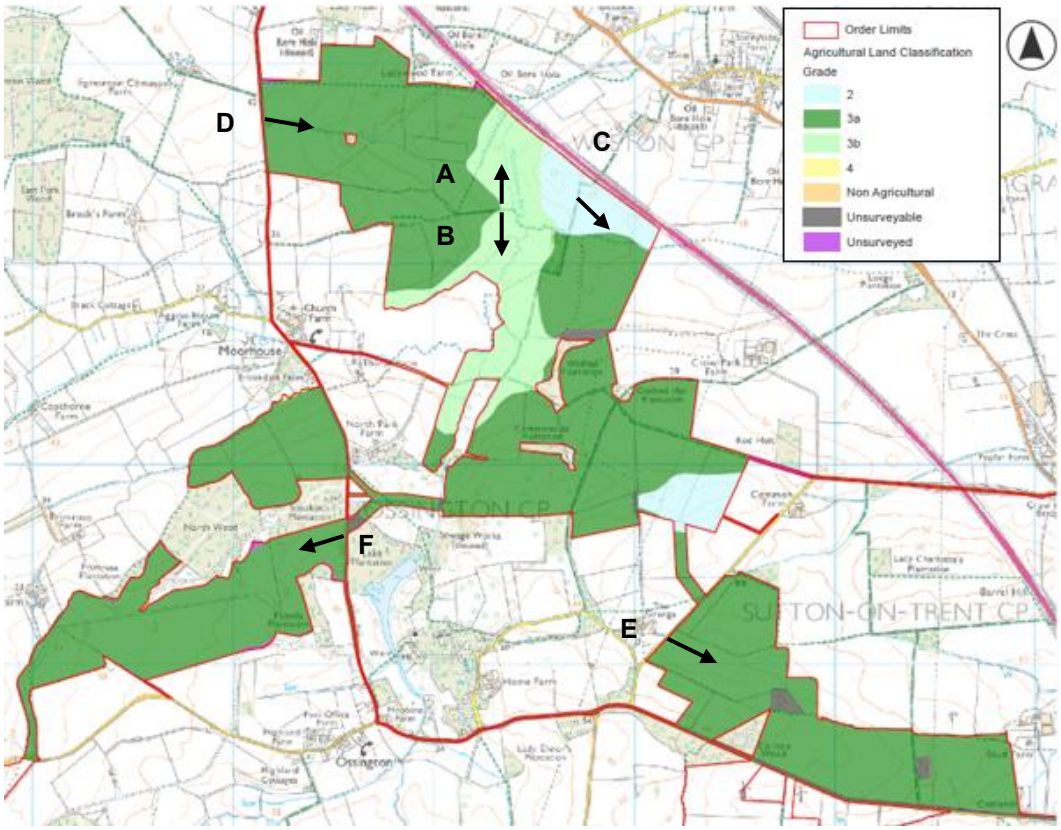
70 The results of the ALC are shown on the following Figures in Volume 3 of the ES:

(i) Figures 17.1 NE, NW, SE and SW (4 plans), showing the ALC results for the Order Limits with the Works Area 1 (solar PV) distribution overlain as a crosshatch;

(ii) Figures 17.5 ALC NE, NW, SE and SW (4 plans), plus Figure 17.6 (BESS).

71 Insert 17.3 shows the ALC results for Block A, the northern block. This is a mixture of land quality, but mostly of subgrade 3a. There is a central band of subgrade 3b and two areas of Grade 2. An insert from Figure A17.1.1 (from Appendix 17.3) is at Insert 17.3.

Insert 17.3: ALC of Block A with Photograph Locations Identified



72 The land within Block A is mostly in use for arable crops, mostly combineable crops (i.e. crops that can be harvested with a combine harvester). Photos 17.1, 17.2 and 17.3 provide an indication of the farming areas in the north of Block A.

Photo 17.1: Viewpoint A, looking North over subgrade 3a (to the left) and subgrade 3b (to the right)

Photo 17.2: Viewpoint B, looking South over mostly subgrade 3b land

Photo 17.3: Viewpoint C, looking South East over Grade 2 soils

73 Purely for the purposes of illustrating the soils, the three small pits below show soils of ALC Grades 2, 3a and 3b, photographed from field parcels 199 and 47, close to photographs 1-3 locations.

Photos 17.4 – 17.6: Soils of Grade 2, 3a and 3b

74 Photograph 17.7 shows a view eastwards over the northern most fields, parcel 159 and 171, taken in summer 2024. Photograph 17.8 shows field parcels 164 and 165, which are subgrade 3a.

Photo 17.7: Viewpoint D, looking East over Subgrade 3a land

Photo 17.8: Viewpoint E, looking East over Subgrade 3a land

75 Photograph 17.9 (viewpoint F) looks west over field parcels 155 and 156, subgrade 3a land, arable land where the reddish soil colour is evident.

Photo 17.9: Viewpoint E, looking East over Subgrade 3a land

76 The northern part of Block B is mostly subgrade 3a with smaller areas of Grade 2. These fields are gently undulating, as shown in viewpoints G and H (photos 17.10 and 17.11). They are mostly in combineable arable crops or agri-environmental scheme cover crops, as shown in Viewpoints G and H.

Insert 17.4: ALC of Block B with Photograph Locations Identified

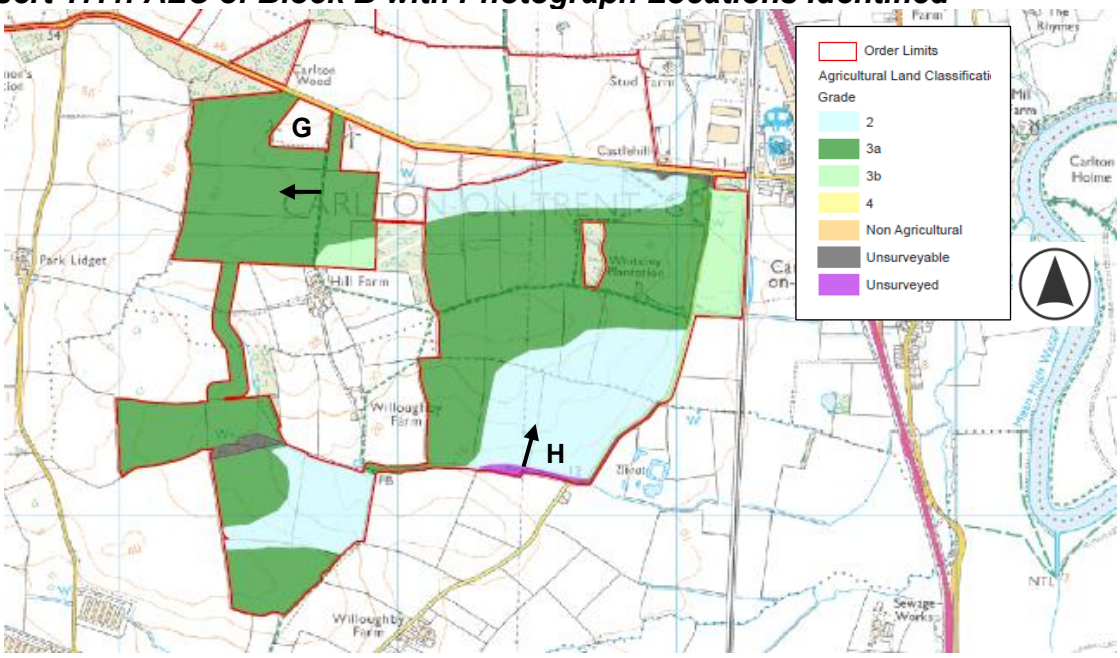


Photo 17.10: Viewpoint G, looking West over parcel 169 (Subgrade 3a)

Photo 17.11: Viewpoint H, looking North over parcel 201 (Grade 2)

77 The southern part of Block B (see Figure A17.1.2 in TA A17.1 [EN010162/APP/6.4.17.1]) has been classified as subgrade 3b. This area has sandy soils. On the provisional ALC (Figure 17.2 [EN010162/APP/6.3.17.2]) the area is shown as Grade 2, and on the Likelihood of BMV maps (Figure 17.3 [EN010162/APP/6.3.17.3]) it is shown as having a high likelihood of BMV. It is, however, subgrade 3b. The land is in arable uses.

Insert 17.5: ALC of Southern Part of Block B with Photograph Locations Added

Photo 17.12: Viewpoint I, Looking South

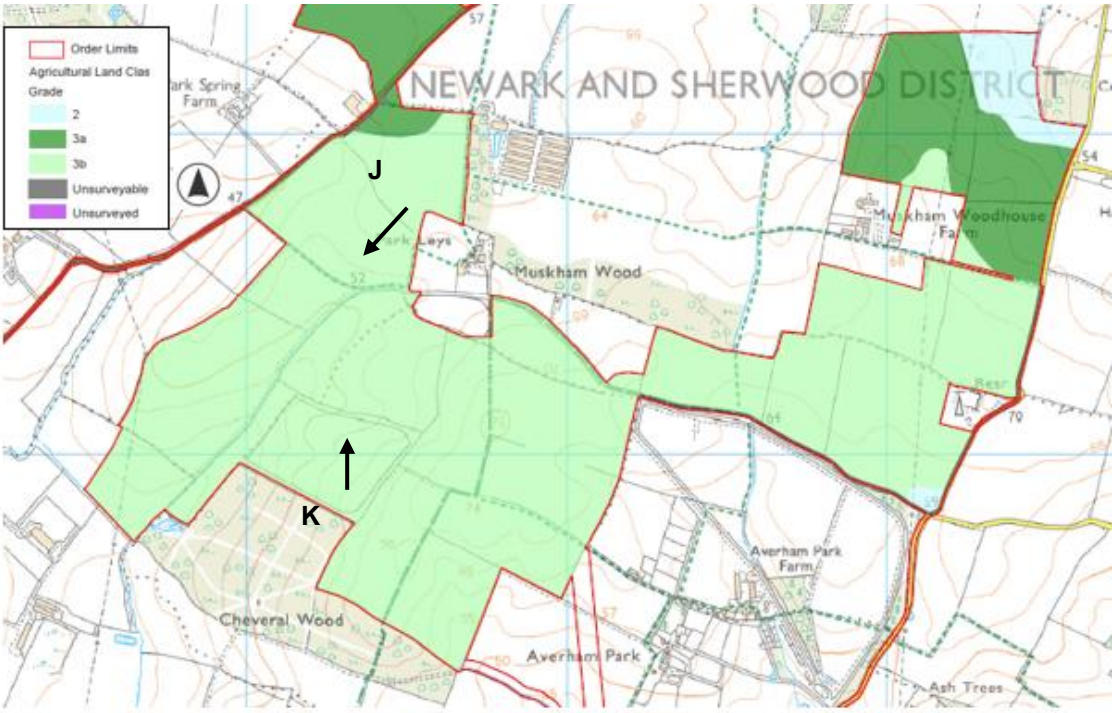
78 The soils in this area are sandy loams over sands, as shown in the illustrative soil pit in photos 17.3 and 17.14. The land is used for cereals, agri-environmental cover and maize (for anaerobic digestion (AD) locally).

Photos 17.13 and 17.14: Soil Pit Dug near to Photo Location I

79 The ALC of much of Block C, as shown on Figure A17.1.3 (in TA A17.1 [EN010162/APP/6.4.17.1]), is subgrade 3b. Two viewpoints are illustrated

on Insert 17.6 below, followed by a soil pit for illustrative purposes in this block (pit dug in field parcel 244).

Insert 17.6: ALC Block C, with Photo Locations Added



80 All of this block is in arable use, mostly cereals with break crops. The land at the northern part of the block is mostly subgrade 3a and is similarly managed. Viewpoints J and K show the typical gently undulating arable soils.

Photo 17.15: Viewpoint J Looking South over Subgrade 3b

Photo 17.16: Viewpoint K Looking North over Subgrade 3b

81 The soils are clayey with a distinct colour change between topsoil and subsoil, as shown in photographs 17.17 and 17.18.

Photos 17.17 and 17.18: Illustrative Soil Pit in Parcel 244

82 Block D is formed from three separate parcels that fall under Works Area 3. These are located at the eastern edge of the Order Limits, in areas shown on the Provisional ALC (Figure 17.2 [EN010162/APP/6.4.17.2]), as Grade 2 and on the Likelihood of BMV maps (Figure 17.3 [EN010162/APP/6.3.17.3]), as having a high likelihood of BMV. They are mostly, however, subgrade 3b, as shown on Figure A17.1.4.

83 Block E is shown on Figure A17.1.5. The western part of the block is arable land, cropped for cereals and combineable break crops, and is all subgrade 3a. Insert 17.7 shows an extract from Figure A17.1.5, and Viewpoint L shows a typical view.

Insert 17.7: ALC Block E, with Photo Locations Added

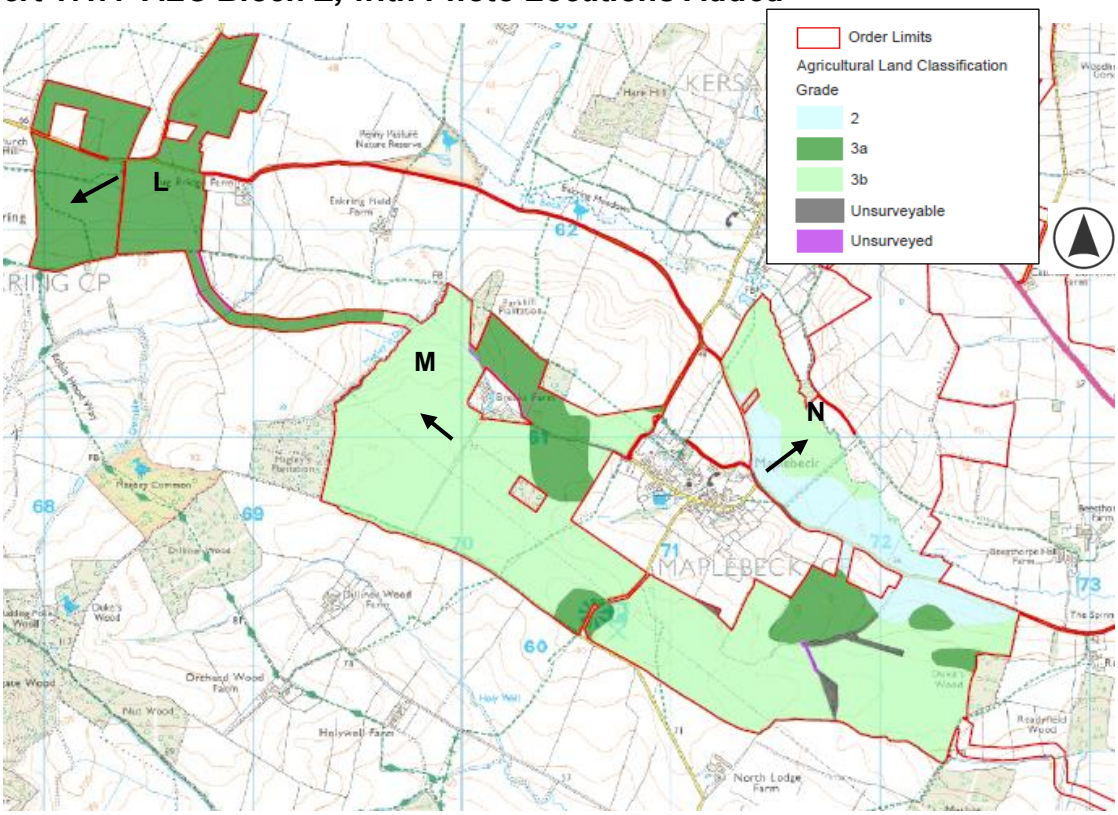


Photo 17.19: Viewpoint L, Looking West over Subgrade 3a Soils

84 The soils in this location are illustrated below, dug in field parcel 79, to the east of photo location L, shown below (subgrade 3a land).

Photos 17.20 and 17.21: Illustrative Soils Pits in Block E, Subgrade 3a

85 The eastern part of Block E is mostly subgrade 3b. It comprises large arable fields used for combineable crops to the south of the settlement, shown typically in viewpoint M.

Photo 17.22: Viewpoint M, Looking Over Subgrade 3b

86 The north-east part is largely down to pasture, used for grazing cattle and sheep, or in an agri-environmental scheme. This area is a mixture of Grade 2 and subgrade 3b, as shown on Figure A17.1.5. Viewpoint N looks north over Grade 2 which changes to subgrade 3b at the northern end of the field.

Photo 17.23: Viewpoint N, Looking North over Grade 2 and Subgrade 3b

87 Block F comprises a number of smaller blocks. The northern part of the block is mostly subgrade 3a, with some subgrade 3b to the east. The land is all in arable cropping, being combineable crops. Typical views are in Photos 17.24 to 17.26.

Insert 17.8: Northern Part of Block F with Photo Locations Added

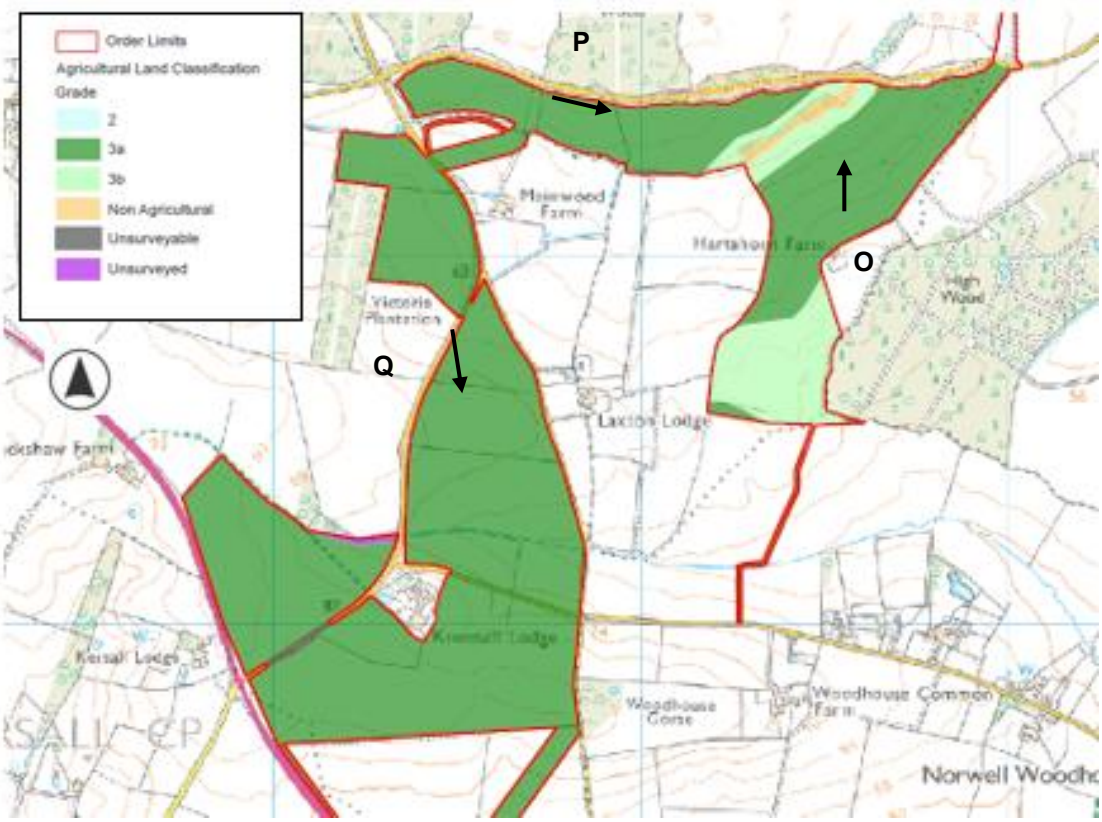


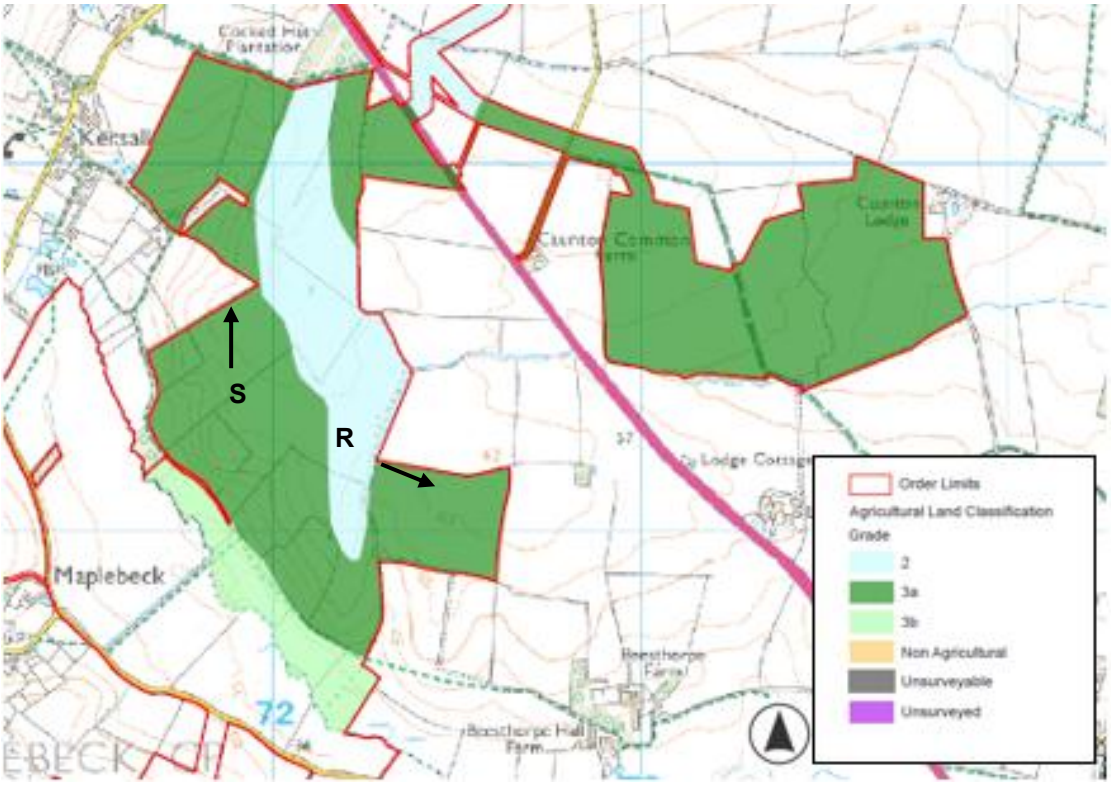
Photo 17.24: Viewpoint O, Looking North over Subgrade 3a with Subgrade 3b in the Valley

Photo 17.25: Viewpoint P, Looking West over Subgrade 3a

Photo 17.26: Viewpoint Q, Looking South over Subgrade 3a

88 The southern part of Block F is a mix of mostly subgrade 3a with a central band of Grade 2. This block adjoins Block E at the southern edge. It is mostly in arable crops, mostly combineable crops.

Insert 17.9: Southern part of Block F with Photo Locations Added



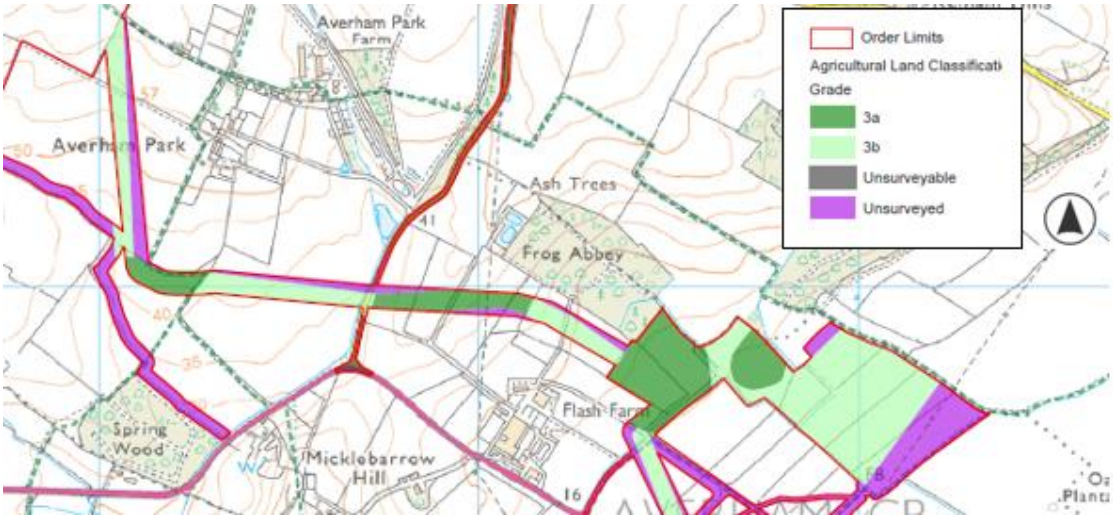
89 Photographs of this area are shown in viewpoints R and S. The land is gently undulating, and in arable use.

Photo 17.27: Viewpoint R, looking east over Subgrade 3a land

Photo 17.28: Viewpoint S, looking north over Subgrade 3a land

90 The land quality of Block G mostly relates to the cable route (Works Area 2). However the BESS and substation are proposed in this Block (Works Areas 5a and 5b). These involve a greater level of disturbance to soils and land quality than most of the other works, as described in section 17.6. The area is mostly subgrade 3b, but Works Area 4 will be located partially on subgrade 3a at the western end. This is shown on Figures 17.6 (2 plans).

Insert 17.10: Block G with Photo Locations Added



91 The area is part of a dairy farm. Most of the area within Works Area 5a and 5b is in grassland, but part is arable land. Viewpoint T looks over the area.

Photo 17.29: Viewpoint T, Looking North West over Subgrade 3b

92 There are areas shown on the ALC plans (Figure A17.1.1 to Figure A17.1.7) and Figures 17.5 and 17.6 that are shown as unsurveyable or unsurveyed. These primarily relate to three areas:

(i) two short sections totalling about 1 Km of cable route in the north of Block C (Figure A17.1.3). Part of the section has been surveyed as subgrade 3b, which is the likely quality of the unsurveyed section. The installation of cables (Works Area 2) is temporary and fully restorable, so the lack of ALC information does not undermine the assessment;

(ii) a single arable field to the east of land surveyed in Block D. This area is proposed for mitigation (Works Area 3), with no disturbance to soils, so this lack of information does not undermine the assessment;

(iii) a modest part of Works Area 5 on Block G, adjacent to subgrade 3b land, together with small sections of cable route within Block G. Neither of these omissions undermine the assessment. The area at the Staythorpe BESS (Works Area 7) has not been surveyed but the area is already permitted for non-agricultural development.

93 The ALC by ALC Grade across the Order Limits is set out in Table 17.6. Areas of woodland, tracks, roads etc are placed in the non-agricultural category.

Table 17.6: ALC Areas Across the Order Limits

	ALC Grade							
ALC Block	**1**	**2**	**3a**	**3b**	**4**	**5**	**Non-Agricultural**	**Not surveyed**
A	0	25.2	369.8	48.1	0.1	0	19.0	1.0
B	0	52.2	114.8	48.8	0.4	0	2.4	0.6
C	0	7.8	70.5	196.3	0	0	7.8	3.5
D	0	0	31.3	41.2	0	0	0	3.1
E	0	34.7	115.1	212.4	0	0	9.4	0.7
F	0	29.6	232.6	22.3	0	0	1.5	0.3
G	0	0	9.8	26.8	0	0	3.2	22.3
Total	**0**	**149.5**	**943.9**	**595.9**	**0.5**	**0**	**43.3**	**31.5**

94 The proportionate breakdown by land quality is set out in Table 17.7. This covers all of the Order Limits..

Table 17.7: ALC Breakdown, Order Limits

ALC Grade	Description	Area (ha)	Proportion (%)
1	Excellent	0	0
2	Very good	149.5	8.5
3a	Good	943.9	53.5
3b	Moderate	595.9	33.8
4	Poor	0.5	0
5	Very poor	0	0
NA	Non-Agricultural	43.3	2.4
NS	Not surveyed	31.5	1.8
Total		**1764.6**	**100.0**

95 Table 17.8 shows the ALC grade by Works Area. Works Areas 6 and 7 are not included in the Table. WA6 is the existing National Grid Substation and is non-agricultural. WA7 is the consented Staythorpe BESS and Connection, which has full planning consent and accordingly is considered as non-agricultural land for the purposes of the baseline assessment.

Table 17.8: ALC Results (Order Limits) by Works Area

Grade	WA1	WA2	WA3	WA4	WA5	WA8	Total
2	103.7	7.2	35.9	0	0	2.7	149.5
3a	627.0	55.2	249.4	2.9	5.9	3.4	943.8
3b	293.9	32.6	250.8	5.0	11.1	2.1	595.5
4	0	0	0.5	0	0	0	0.5
N/A	0	0.1	1.3	0	0	0	1.4
Total	**1,024.6**	**95.1**	**537.9**	**7.9**	**17.0**	**8.2**	**1,690.7**

96 Note that due to rounding the total is 0.5 ha adrift from the total in Table 17.6.

97 The baseline therefore contains areas of land of Grade 2 and Subgrade 3a, which are of high sensitivity (Table 17.2) and land of medium sensitivity (Subgrade 3b).

17.7.3 Soils

98 Information about the soils across the Order Limits has been collected as part of the ALC survey and is reported in TA A17.1 [EN010162/APP/6.4.17.1].

99 The soils across the Order Limits are described in Table 17.9. This information has been used to develop an Outline Soil Management Plan, which forms TA A17.2 [EN010162/APP/6.4.17.2].

100 The soil types are described in Table 17.9. They have not been plotted on a plan as none of the soils, in this climatic area, are of high sensitivity, and therefore none will result in a significant adverse effect.

Table 17.9: Summary of Soils Identified

Area	Soils
A	To the north and west – Worcester Association – slowly permeable non-calcareous and calcareous reddish clayey soils over mudstone, shallow on steeper slopes. Around watercourses – Compton Association – stoneless mostly reddish clayey soils affected by groundwater. To the southeast – Whimple 3 Association – reddish fine loamy or fine silty over clayey soils with slowly permeable subsoils and slight seasonal waterlogging.
B	To the west – Worcester Association – slowly permeable non-calcareous and calcareous reddish clayey soils over mudstone, shallow on steeper slopes. Around watercourses – Compton Association – stoneless mostly reddish clayey soils affected by groundwater. To the northeast – Whimple 3 Association – reddish fine loamy or fine silty over clayey soils with slowly permeable subsoils and slight seasonal waterlogging. To the east – Arrow Association – deep permeable coarse loamy soils affected by groundwater.
C	The centre of the site – Brockhurst 1 Association – slowly permeable, seasonally waterlogged reddish fine loamy over clayey soils. To the north west, east and south – Worcester Association – slowly permeable non-calcareous and calcareous reddish clayey soils over mudstone, shallow on steeper slopes.
D	To the west – Worcester Association – slowly permeable non-calcareous and calcareous reddish clayey soils over mudstone, shallow on steeper slopes. Around watercourses – Compton Association – stoneless mostly reddish clayey soils affected by groundwater. To the east – Arrow Association – deep permeable coarse loamy soils affected by groundwater.

Area	Soils
E	On the higher ground – Brockhurst 1 Association – slowly permeable, seasonally waterlogged reddish fine loamy over clayey soils. Around watercourses – Compton Association – stoneless mostly reddish clayey soils affected by groundwater. Between the higher ground and watercourses from about half way down the slopes – Worcester Association – slowly permeable non-calcareous and calcareous reddish clayey soils over mudstone, shallow on steeper slopes. The fields nearest to Eakring – Hodnet Association – reddish fine and coarse loamy soils with slowly permeable subsoils and slight seasonal waterlogging.
F	Most of this site – Worcester Association – slowly permeable non-calcareous and calcareous reddish clayey soils over mudstone, shallow on steeper slopes. Around watercourses – Compton Association – stoneless mostly reddish clayey soils affected by groundwater. Around Kneesall Lodge and either side of the A616 – Salop Association – slowly permeable seasonally waterlogged reddish fine loamy over clayey, fine loamy and clayey soils. While there are a variety of different soil types identified across the various parts of the site they are fairly consistent being slowly permeable reddish clayey soil across most of the fields with the areas closest to the A1 recorded as being deep coarse loamy soils.
G	To the west – Worcester Association – slowly permeable non-calcareous and calcareous reddish clayey soils over mudstone, shallow on steeper slopes. Around watercourses – Compton Association – stoneless mostly reddish clayey soils affected by groundwater. To the east – Arrow Association – deep permeable coarse loamy soils affected by groundwater.

101 Photos 17.30 to 17.36 are illustrative of typical soils found within the Order Limits.

Photos 17.30 – 17.32: Grade 2 soils, Parcel 199

Photos 17.33 and 17.34: Subgrade 3a in Parcel 79

Photos 17.35 and 17.36: Subgrade 3b in Parcel 244

102 Across the Order Limits there are extensive areas of soils that fall within the medium sensitivity category in Table 17.2.

17.7.4 Farm Businesses

103 Information about the farming businesses involved has been obtained primarily from interviews, mostly face to face. In a small number of cases contact was not made or the farmer did not wish to provide information, but these small omissions do not undermine the assessment and do not relate to situations where a significant impact is likely. Farming information has not been collected for the Cable Route Corridor (Works Area 2) because the impact will be short-term, temporary and fully reversible.

104 Figure 17.7 [EN010162/APP/6.317.7] identifies the landowners within the Order Limits. To provide a degree of anonymity, these landowners have been given reference numbers 1, 2, 3 etc.

105 There are 19 farm businesses occupying land within the Order Limits. Some of these are tenants of landowners, and some landowners have more than one tenant. Farm Business Reports are set out in Appendix TA17.3.3. Each of these reports provides plans and references to enable identification of the land owned, rented or otherwise farmed.

106 Each business is described briefly in Table 17.10.

Table 17.10: Summary of Farm Businesses

Land Owner Ref	Farm Name	Area Farmed	Summary of Farming Enterprises within Order Limits
1	Farm Business A	Approx 63 ha	Arable farm with a rotation of combineable crops (wheat, beans, oilseed rape) mostly grown for animal feed or biofuels.
2	Farm Business B	Approx 285 ha	Arable farm growing cereals, with some areas also growing potatoes, parsnips and sugar beet.
3, 25	Farm Business C	Approx 400 ha farmed (owned and rented) and 200 ha contract farmed	Most of the land is arable land, and mostly growing cereals and break crops.
4	Farm Business D	Approx 97 ha	Cereal rotation with break crops, mostly farmed by contractors.
5	Farm Business E	Approx 380 ha (340 ha owned)	Mixed farm. Mostly cereals with some maize grown for AD. Cattle on the grassland. Some land let for parsnips.
6, 20	Farm Business F	Approx 660 ha (185 ha owned)	All arable. Mostly cereals but some sugar beet and some land let for potato growing.
7	Farm Business G	Approx 1,510 ha	All arable land used for growing cereals with a break crop.
8	Farm Business H	110 ha (all rented)	Mostly arable in cereals with a break crop.
9	Farm Business I	Approx 650 ha plus 200 ha contract farming	Mostly cereals with break crop and sometimes maize grown for AD.
10	Farm Business J	Approx 350 ha	All cereals farmed by another unit under contract
11	Farm Business K	Approx 85 ha	Cereals and break crop. Grew maize for AD in 2024, not likely to be repeated.
12	Farm Business L	Approx 100 ha (76 ha owned)	Mixed farm, with cereals and break crop and 30 cow suckler herd, with some grazing in the Order Limits.

Land Owner Ref	Farm Name	Area Farmed	Summary of Farming Enterprises within Order Limits
13, 23	Farm Business M	Approx 2,000 ha (owned and share farmed)	Mixed farm, with cereals, sugar beet, potatoes, carrots, onions and maize, plus cattle and sheep.
14	Farm Business N	Approx 155 ha (let on FBT)	All arable, cereals only.
15, 21, 22, 24	Farm Business O	Approx 1,600 ha	Mostly cereals with some land used for maize for AD.
16	Farm Business P	105 ha	Mostly arable.
8	Farm Business Q	345 ha	Two thirds arable cropping, one third grassland.
17	Farm Business R	Information not provided	Principally a substantial dairy farm.
8	Farm Business S	1,200 ha	Arable, cereals with break crops/SFI.
18	Farm Business T	Information not provided	A block of arable land.
19	Farm Business U	A block of circa 60 ha	Mostly arable or agri-environmental land.
8	Farm Business V	Information not provided	Arable land run by contractors.

Terminology: AD – Anaerobic digestion
FBT – Farm Business Tenancy
SFI – Sustainable Farming Incentive

107 Table 17.10 shows that most of the farms are arable farms, and mostly the crops grown are cereals with combinable break crops (i.e., crops that are harvested using a combine harvester). Some farms grow small areas of potatoes or sugar beet, but very little land within the Order Limits is used for these crops. Some farms have beef and sheep enterprises across their wider farm holdings.

108 The area for the proposed BESS (Work no. 5a) and 400 kV Compound (Work no. 5b) forms part of a dairy farm. The land involved is grassland or ley grassland (i.e., periodically reseeded) and is grazed by cattle as part of normal management.

109 The farms involved are therefore mostly in the medium sensitivity category (Table 17.2). Some farms are part-time or let to others to farm, and fall into the low sensitivity category (Table 17.2).

17.7.5 Future Baseline Conditions

110 It is anticipated that there would be no change to the baseline in the future. Cropping choices and agri-environmental scheme uptake may vary but continued agricultural use is expected.

17.8 ASSESSMENT OF EFFECTS

17.8.1 Construction Phase

111 The Development's construction phase effects have been considered in terms of the solar PV arrays, construction compounds, access tracks, substation areas, BESS area(s), the cable route corridor, and wildlife sites or enhanced ecological mitigation areas.

17.8.1.1 Solar PV Arrays and Related Works (Work no. 1)

112 The process of installing the PV Arrays involves marking out the grid on the ground, which is done on foot. Teams then lay out the piles. This stage is non-intrusive and should take place when soils are suitably dry. A tractor and trailer will be used to transport the piles to the fields, then each pile is lifted off by hand.

113 Construction workers then drive the piles into the ground. This is a swift process and has little impact on the soil because the piles are inserted into the soil with no removal of soil and the soil is simply pushed aside by the pile. An example of this construction activity is shown in Photo 17.37, which shows the installation of piles into soil.

Photo 17.37: Framework Piles being Installed

114 The design of PV arrays varies from one project to another, but the framework piles are all similar. The limited impact of installing the piles on the underlying land is illustrated in Photo 17.38. The purpose of the photograph is to show that there is little disturbance to the soils. The design above ground does not affect soils and the design may therefore vary from the example. The purpose of the photograph is to show the piles as they enter the ground and the absence of effects of construction traffic.

Photo 17.38: Framework Posts being Installed (taken at Tiln Farm, Retford, in January 2023)

115 There is minimal damage caused by the next stage of the construction process, which is the assembling of the framework and the bolting-on of panels. This stage requires the framework and panels to be transported to site. They are lifted off by hand and assembled by hand. Machinery runs down the lines between the strings of panels being assembled. There is no ground disturbance, so the only risk comes from travelling over the land in typical agricultural-sized machinery.

Photo 17.39: Part Installed Panels (Purton, Wiltshire)

116 For the Development, it will be necessary to connect electrical cables between the solar PV modules and to run the cables to the inverters and transformers (see Chapter 5, Development Description [EN010162/APP/6.2.5] for more detail on this). This will involve trenches, dug with a machine. The trench width will depend upon the size of cable; generally trenches for cables between the solar PV arrays and the inverter/substation units will be narrow (e.g., 50 cm). Larger cables within Work no. 1 are discussed in Section 17.8.1.5. As will be governed by the oSMP (TA A17.2 [EN010162/APP/6.4.17.2]), the work involves removing the topsoil and placing it to one side of the trench. The subsoil is then removed and placed on the other side of the trench. Once the cable has been inserted the subsoil is then replaced, with the topsoil put back on the top.

117 This approach is used to ensure that soils are restored and settle within days. Once the soils have settled these areas can be resown if necessary,

waiting if necessary for the soils to be suitably damp for grass seed to germinate. Overall the magnitude of impact will be low. In respect of agricultural land of medium or high sensitivity this will result in an effect of minor adverse significance. In respect of soils of medium or low sensitivity, the effect will be minor or negligible.

17.8.1.2 Construction Compounds (within Work No.s 1-7)

118 Construction compounds are temporary areas, and will be fully restored at the end of the construction phase (some may then be used for solar PV, see Chapter 5: Development Description [EN010162/APP/6.2.5]). The works usually involve stripping topsoil in suitable conditions which is stored temporarily in a bund. A membrane is normally then added, and an aggregate surface placed on the matting, as shown in Photo 17.40. On restoration the process is reversed, and the topsoil is replaced. Construction compounds will be in place for no more than 2 years, and soils will not have deteriorated as they will be stored as set out in the oSMP (TA A17.2) [EN010162/APP/6.4.17.2]. Works will be undertaken under the guidance of the final Soil Management Plan (which will be developed from the oSMP [EN010162/APP/6.4.17.2]) and will give full attention to Defra's Construction Code of Practice[13] and the soil suitability criteria in the Institute of Quarrying Good Practice Guide[14]. Each construction compound is expected to be a maximum of 1 – 2 ha (see Chapter 5, Development Description [EN010162/APP/6.2.5]). In many cases the areas involved will be less than this.

Photo 17.40: Newly Installed Construction Compound

119 These works are temporary and short term. They are fully reversible. The impact is of low magnitude, on agricultural land of high or medium sensitivity, and soils of medium or low sensitivity, resulting in minor effects.

[13] Department for Environment, Food and Rural Affairs (2009), Construction Code of Practice for the Sustainable Use of Soils on Construction Sites
[14] The Institute of Quarrying (2021) Good Practice Guide for Handling Soils in Mineral Workings

17.8.1.3 Access Tracks (within Work no.s 1-8)

120 Access tracks are usually constructed in a similar manner to construction compounds, although increasingly consideration is being given to above-ground installation methods not involving the removal of topsoil. In the case of topsoil removal this will be stored in a low mound alongside the track, grassed over and managed with the surrounding grassland, ensuring that the soil remains available for easy restoration at the decommissioning phase, if required. Further information is available in the outline Decommissioning and Restoration Plan, TA A5.6 [EN010162/APP/6.4.5.6].

121 The land areas by ALC grade affected temporarily by tracks is set out in Table 17.11. The layout is shown indicatively on Figure 5.4 Illustrative Design [EN010162/APP/6.3.5.4]. Whilst the final areas may vary, the variation is unlikely to be significant. For example, it would be functionally illogical to provide tracks other than where needed. To give the assessment some context, the proportion by ALC across the Order Limits is also shown (taken from Table 17.7 in section 17.5.2). The proportion is similar, adding weight to the reliability of the estimate.

Table 17.11: Estimate of Internal Roads by ALC Grade

ALC Grade	Area (ha)	Area (%)	% Across Order Limits
2	2.0	10	8.5
3a	11.4	56	53.5
3b	6.0	29	33.8
Non-ag or not known	1.0	5	4.2
Total	**20.4**	**100**	**100**

122 Other works within Works Area 1, such as the installation of fences and gates, will not adversely affect land quality and will be reversible, temporary works.

123 The works are all temporary and accordingly of low magnitude. They will affect agricultural land of medium or high sensitivity, and soils of low or medium sensitivity, resulting in effects of negligible or minor adverse significance.

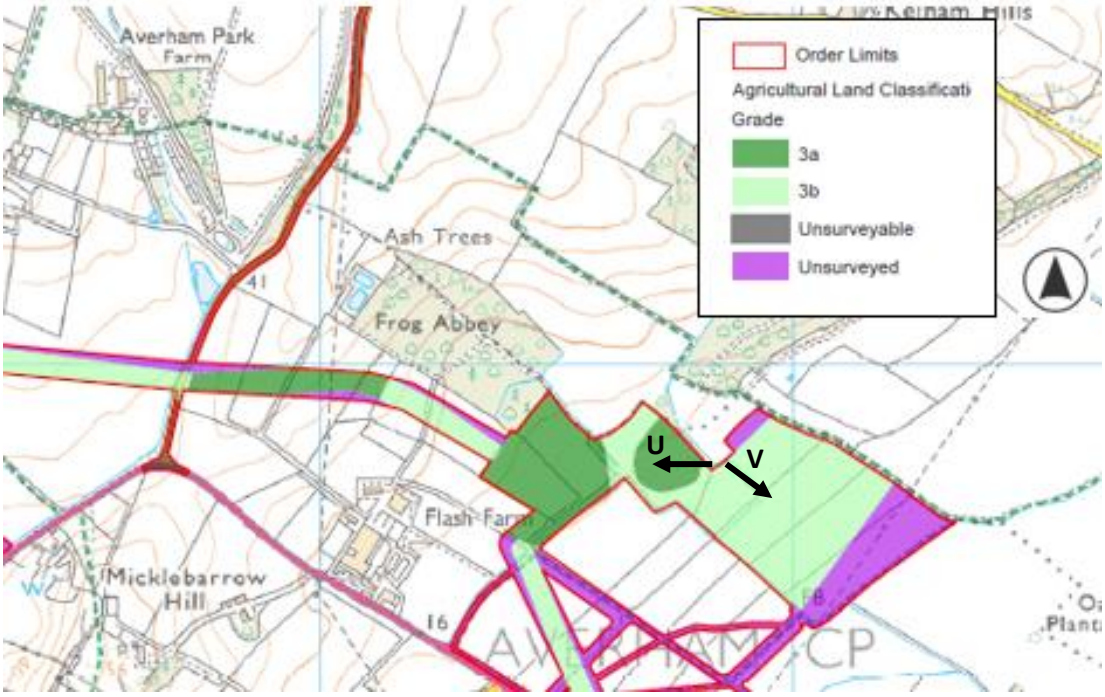
17.8.1.4 Substation and BESS Areas (Work no.s 4, 5a and 5b)

124 Up to four intermediate substations will be required, and the 400 kV substation is proposed at the southern end of the Order Limits (Works Nos 4 and 5b). The construction of these areas will involve removal of topsoil and, in places, subsoil to create bases and cable connection areas. It will be necessary to store soil for the duration of the operational phase, and to store any subsoil removed separately to the topsoil, as part of TA A17.2 Outline Soil Management Plan (oSMP) [EN010162/APP/6.4.17.2]. Each substation is a maximum of 0.5 ha in extent (see Chapter 5, Development Description [EN010162/APP/6.2.5]). Collectively the 4 substations involve the use of 1.5 ha of subgrade 3a land.

125 The BESS areas (Work no. 5a) require topsoil to be removed and a hard and level base to be created. This may require some site levelling, and therefore movement of subsoils. Soils moved will be stored in suitably managed bunds nearby, similar to the construction compound process shown above, in accordance with the SMP. These works will be restored fully on decommissioning.

126 The BESS Area (Works Area 5a) covers an area of 12.8 ha (1.7 ha Subgrade 3a, 11.1 ha Subgrade 3b). It adjoins the 400 kV Compound (Works Area 5b). The land on which the BESS will be located is mostly of Subgrade 3b "moderate" quality, as shown on Insert 17.11. As set out in the oSMP (TA A17.2 [EN010162/APP/6.4.17.2]), restoration on decommissioning will occur. Full details will be contained in the final Soil Management Plan and secured by DCO Requirement.

Insert 17.11: ALC of BESS Area and Photographs



127 The 400 kV Compound (Work no. 5b) includes a maximum compound area of 3 ha in accordance with Chapter 5, Development Description [EN010162/APP/6.2.5]. This includes 1.7 ha of subgrade 3a and a small area that has not been surveyed. This area is therefore assumed to include up to 3.0 ha of Subgrade 3a. It is assumed for the purposes of this assessment that a worst-case impact would be that the substation is not removed on decommissioning. It is assumed, worst-case, that this land will be irreversibly developed which is a permanent effect.

128 Photos 17.41 and 17.42 show the areas for Work No.s 4, 5a and 5b.

Photo 17.41: Viewpoint U, looking west

Photo 17.42: Viewpoint V, looking south

129 Works No. 5a is temporary. As such the magnitude of impact is low on resources land quality of high and medium sensitivity, resulting in effects of minor significance. Work no.s 4 and 5b will (in a worst-case assessment, assuming they are left permanently in place following decommissioning) result in a permanent impact. Work no. 5b includes a maximum 3 ha of BMV land. Work no. 4 includes a total of 2 ha of compound of which a maximum of 1.5 ha is BMV. The collective impact is the loss of 4.5 ha of BMV from Work no. 4 and Work no. 5b, resulting in a low magnitude impact on a resource of high sensitivity, which would be a minor adverse effect, which is not significant.

17.8.1.5 Cable Routes (Work no. 2 and parts of Work no.s 1, 4, 5a, 5b, 6 and 7)

130 As requested by PINS in the Scoping Opinion (see Table 17.1), as the cable route has been defined the land quality of the route has been assessed. The cable route involves mostly land of Subgrade 3a and 3b. Under detailed guidance in the final SMP, an outline of which is provided at TA A17.2 [EN010162/APP/6.4.17.2], topsoils will be stripped from either the trench or the whole of the working width and stored to one side. Then subsoils from the trench will be stored next to but separate from the topsoils. Once the cables have been installed, the subsoils will be replaced and the topsoil respread, before the area is cultivated as necessary and returned to agricultural use. This is a reversible, temporary works and fully reversible. The land quality will not be affected.

131 The ALC within Works No. 2, Cables is shown in Table 17.12.

Table 17.12: ALC Within Work No. 2, Cables

ALC Grade	Area (ha)	Proportion (%)
2	7.2	7.6
3a	55.2	58.0
3b	32.6	34.3
4	0	0
Non-ag	0.1	0.1
Total	95.1	100.0

17.8.1.6 Summary of Potential Effects to Soil Quality and Availability of BMV Agricultural Land

132 There will be temporary disturbance of soils, and land quality, in the areas in which the construction compounds are erected. These areas are, however, affected in the short-term and are therefore not measured for the assessment. These areas will be installed in line with best practice, secured through the final SMP, to ensure there are no significant effects to quality of soils during that time, and will be remediated, if required, after removal of compounds.

133 Areas affected during construction, that will continue to be affected for the operational phase involve the agricultural land required for construction of the base areas for fixed equipment (such as substations), the internal access tracks, and the BESS compound.

134 By ALC grade, the areas of fixed equipment are divided approximately as shown in Table 17.13.

Table 17.13: Land Loss by Grade

	Areas in ha by ALC Grade				
Component	**Grade 1**	**Grade 2**	**Subgrade 3a**	**Subgrade 3b**	**Non-ag**
Tracks	0	2.0	11.4	6.0	1.0
Work no. 4 and 5b, on-site substations, and Work no. 5a, BESS	0	0	6.0	11.1	0
Totals	**0**	**2.0**	**17.4**	**17.1**	**1.0**

135 These areas are all capable of being restored at the decommissioning phase of the Development. The works require the removal of topsoil, its storage in suitable conditions, and its replacement following the removal of the fixed equipment, as set out in the oSMP (TA A17.2 [EN010162/APP/6.4.17.2]). None of the fixed equipment requires deep foundations, and mostly only topsoil requires to be stripped off and stored. There is extensive advice available, for example in the Construction Code of Practice for the Sustainable Use of Soils on Construction Sites (Defra (2009). Advice on identifying when soils are suitable for being worked is set out in the Institute of Quarrying's "Good Practice Guide for Handling Soils", and references and photographs of soils in suitable and unsuitable states are set out in the oSMP (TA A17.2 [EN010162/APP/6.4.17.2].The reinstatement to comparable soil properties and land grade would be undertaken in accordance with a Decommissioning and Restoration Plan (DRP), an outline of which is provided as ES TA A5.6 [EN010162/APP/6.4.5.6].

136 The oSMP (TA A17.2 [EN010162/APP/6.4.17.2]) sets out the principles, but the appropriate controls will be provided through a final SMP, which will be in accordance with the oSMP. The works involve small areas and soil will be stored close to the area from where it was moved, so that the same soil can be returned. There is an effect for the duration of the operational phase, because these areas will not be in agricultural use and topsoil will have been removed, but no long term loss. The impact is therefore temporary (low magnitude) as the works do not involve the "*permanent, irreversible loss … (including permanent sealing or land quality downgrading)*" as defined as "*loss*" in the IEMA Guide.

137 Consequently, the Development will result in the disturbance of approximately 19.4 ha of BMV agricultural land. As set out in the Outline Decommissioning and Restoration Plan (DRP, TA A5.6 [EN010162/APP/6.4.5.6]), development in Work no.s 4 (intermediate substations), 5b (400 kV Compound) and 7 (Consented Staythorpe BESS) may remain following the decommissioning phase. This would amount to a total of 4.5 ha of BMV. The rest of the land is all capable of restoration to a comparable grade at the decommissioning phase.

138 If a worst-case assessment regarding the substations is taken, in that all of Works Areas, 4, 5b and 7 are not removed on decommissioning, the impact would be the loss of 4.5 ha of BMV. This is a low magnitude (less than 5 ha) impact and accordingly **minor adverse**, which is **not significant**.

139 Temporary, reversible losses of soil related features (including biomass production) are low magnitude of impact changes in the IEMA Guide (Table 17.3). Low magnitude impacts on resources of high or medium sensitivity equate to **minor adverse** significance (Table 17.4). The overall impact is therefore minor adverse for the 40 year duration of the operational lifespan of the Development, which is **not significant**. All of these areas are capable of full restoration back to the current status.

140 Therefore, the expected impact is a temporary use of BMV and a permanent loss (Works no. 4 and 5b) of 4.5 ha of BMV). The impact should be seen in context. In England there is an estimated 1.85 million hectares of Grades 1 and 2, and a further 1.85m ha of Subgrade 3a. The land quality in the area

is generally high (as set out in Figures 17.2 [EN010162/APP/6.3.17.2] and 17.4 [EN010162/APP/6.3.17.4]).

141 The agricultural land quality statistics for the Nottinghamshire County Council area, derived from the MAFF Provisional maps (and therefore for strategic decision taking rather than individual applications) are shown below. If the national statistic is applied, 40% of Grade 3 will be Subgrade 3a. The figure for BMV land is shown. The analysis identifies that the national proportion of BMV is 41.3%, whereas in Nottinghamshire County it is just over 50% and in Newark and Sherwood it is 48.4%. The assumption that only 40% of Grade 3 is Subgrade 3a at a local level may well be an under-estimate, such that the proportion of BMV could be higher.

Table 17.14: Proportion of Land by ALC Grade

ALC Grade	England		Nottinghamshire		Newark and Sherwood	
	ha	%	ha	%	ha	%
1 Excellent	354,562	3.1	554	0.3	0	0
2 Very good	1,848,874	16.2	37,908	20.7	8,915	15.2
3 Good to moderate	6,290,210	55.0	133,638	73.1	48,795	83.1
4 Poor	1,839,581	16.1	10,719	5.9	979	1.7
5 Very poor	1,100,305	9.6	0	0	0	0
Total	11,433,532	100.0	182,819	100.0	58,689	100.0
BMV Estimate(1)	-	41.3	-	50.2		48.4

(1) Grades 1, 2 and 40% of Grade 3

142 Accordingly, potentially the Development involves the permanent loss of 4.5 ha of BMV, as expected, for Work no. 4 and Work no. 5b. Even if none of the land was restored, the permanent loss of 19.4 ha of BMV (worst-case assessment) represents a negligible proportion of BMV agricultural land at a District, County or National level. The threshold for consultation with Natural England is 20 ha of BMV and, whilst for EIA the effect is assessed as significant, in land-use planning considerations the effect would not weight significantly against the benefits. However, the realistic expectation is for the loss of 4.5 ha of BMV, all subgrade 3a.

17.8.1.7 Effects on Soils

143 The potential effects on soils have been described alongside the effects on agricultural land in the assessment. The disturbance to soils is generally temporary and limited. The soils within the Order Limits are of medium (mostly) and low sensitivity.

144 Soils are not generally disturbed during the construction phase. Disturbance to soils is mostly restricted to the physical moving of soils for the creation of tracks and bases, as described in the preceding section reviewing the effects

on land quality, or to any adverse effects from the movement of machinery causing surface damage or, potentially, compaction.

145 The machinery involved in the construction and installation of Works no. 1 is generally small, as reviewed in the consideration of the effect on land quality, and generally smaller than most farm machinery. There will not be a requirement for multiple trafficking across the same areas other than delivering the solar PV framework and panels along the gaps between the Solar PV strings, and any damage in those areas will generally be limited and can readily be remedied, as described in the oSMP (TA A17.2 [EN010162/APP/6.4.17.2]). The magnitude of impact is low, on soils of medium or low sensitivity, resulting in a minor or negligible adverse effect.

146 The machinery involved in the cable laying in Works no. 2, and where it crosses within Works no 1, will be larger. The carefully-timed and managed removal of soils and reinstatement for the installation of cables will not result in a significant adverse effect on soils. The works will be short-term and reversible (low magnitude impact) and soils are generally of medium or low sensitivity, resulting in a minor or negligible adverse effect.

147 There will be no disturbance to soils in Works no 3.

148 Machinery involved in Works no.s 4, 5 and 6 may at times be larger than farm machinery. The soils will be removed and stored, as set out in outline in the oSMP the oSMP (TA A17.2 [EN010162/APP/6.4.17.2]) and, except for Works no 5b, will be restored on decommissioning. The works will therefore be temporary (except for Works 5b) and a temporary impact on resources of medium or low sensitivity results in a minor or negligible adverse effect.

149 Therefore, with the exception of Works no 5b, the effects on soils are therefore temporary. A temporary, reversible impact on soil-related features (including biomass production) is a low magnitude impact (Table 17.2). The soils in the Order Limits are of medium or low sensitivity, therefore the effect will be **minor** or **negligible adverse**, which is **not significant**.

17.8.1.8 Effects on Farm Businesses

150 Effects on the occupying farm businesses will commence and change during the construction phase. The effects on farm size and structure, and long-term operation, being the effects once the Development is constructed, are described under the operational phase below.

151 Construction activity will be carefully controlled so that the use of the local highway network is not significantly affected, so travel between farmyards and agricultural land in the area will continue unhindered. There are no internal tracks within the area of the Development that serve other farmland, so the Development will not affect any existing accesses.

152 There are only low or negligible construction-phase impacts on agricultural businesses, which are of medium or low sensitivity. Accordingly, the construction-phase effects are **minor** or **negligible**, which is **not significant**.

17.8.1.9 Summary of Construction Phase Effects

153 In respect of direct effects during construction, it is concluded as follows:

- **Agricultural land quality**. The majority of the Development will not affect agricultural land quality. Works no 1 and 2 that involve soil disturbance are limited in scale, temporary and reversible, and therefore of low magnitude. There is land of BMV within the Order Limits, approximately 62% of which is BMV, but the quantum disturbed is only 19.4 ha. All but 4.5 ha of this will be fully restored on decommissioning. Accordingly the impact is of low magnitude on resource of high sensitivity, resulting in an adverse effect of **minor adverse** significance, which is **not significant**;
- **Soils**. The soils are mostly of medium sensitivity, with soils of low sensitivity particularly in the eastern parts of the Order Limits. The soils will generally not be disturbed, and disturbance for installation of Solar PV modules, trenching and cable laying (Works no.s 1 and 2) will be temporary. Overall the magnitude of impact is low, on resources mostly of medium sensitivity, resulting in an adverse effect of **minor adverse** significance, which is **not significant**;
- **Farm businesses**. Construction works are temporary and short-term, and there are only low or negligible adverse impacts on farms of medium or low sensitivity, resulting in **minor** or **negligible adverse** effects, which is **not significant**.

17.8.2 Operational Phase

154 The assessment of the Development's operational phase effects is based on the Development as outlined in Chapter 5 [EN010162/APP/6.2.5].

155 The potential effects during the operational phase of the Development are:

- Effects on soils from long-term grassland uses and the effects from site maintenance activities;
- Effects on the operation of the farm businesses and local agricultural labour needs;
- Food production implications. This is generally an economic/ land use consideration; and
- The economic and other considerations of the use of BMV agricultural land, as required in NPS EN-3.

17.8.2.1 Agricultural Land Quality

156 There will be no further disturbance to soils during the operational phase of the Development; therefore, the agricultural land quality within the Order Limits will not be affected during this phase of the Development.

157 There will be no requirement for heavy machinery to traffic soils during the operational phase. Accordingly, there will be no significant disturbance of soils affecting land quality. The combination of increasing organic matter levels (see below) and lack of machinery activity will allow a natural enhancement of the soil. This will not, however, alter the ALC grade of land within the Order Limits.

158 Maintenance and cleaning machinery will be transported via a van or small tractor, which is generally lighter than most farm machinery. A typical cleaning machine is shown in Photo 17.43. If the soils are wet when access is taken, there is the potential for slight indentations to be made (such as

shown in Photo 17.44 for a scheme similar in nature to the Development), but such effects on soils are not significant, or permanent, and will not alter ALC grade. Typically, the machinery such as illustrated in Photo 17.43 is used, which is no heavier than a small tractor. Cleaning takes place in late spring, to clean the panels before the main solar generation period, when soils are normally dry and therefore not susceptible to damage in any event.

Photo 17.43: Cleaning of Solar Modules

159 There may occasionally be small rutting caused by agricultural vehicles (for example quads) or vans used by engineers. Typical light impacts are illustrated in Photo 17.44. These indents will normally be levelled by the feet of grazing sheep, but if there are deeper ruts they could be repaired by a lightweight roller in the spring.

Photo 17.44: Example of Minor Ruts Caused by Vehicles

160 There may be occasional need for works of repair which might disturb soils. These will be infrequent. If possible, any works requiring soils to be moved should be timed for the summer period, in accordance with the processes in the final SMP. Any trenching, whether carried out in ideal conditions or not (not ideal conditions are illustrated in Photo 17.45), looks unsightly initially, but rapidly recovers and is indistinguishable once grass cover has returned. These effects will be of negligible magnitude.

Photo 17.45: Emergency Trench Installed During Wet Period

161 Therefore, there are no physical works required during the operational phase which will adversely affect agricultural land quality. The impacts are therefore of negligible magnitude, on resources of medium or high sensitivity, resulting in an effect of **negligible** significance, which is **not significant**.

162 In terms of land use, there will be a change over most of the Order Limits from arable (cereals and break crops mostly) to grassland. Once the Solar PV modules have been installed, the land may be used by sheep for grazing (or otherwise managed grassland, although this is commercially substantially worse). Both land uses fall within the definition of agriculture[15]. The change of agricultural land management from arable to mixed Solar PV modules and grassland uses is a land management consideration. These are considered in section 17.8.2.4. Land use changes of this nature do not result in an adverse effect on agricultural land quality.

163 The effect on agricultural land quality during the operational phase is therefore **negligible**, which is **not significant**.

17.8.2.2 Effect on Soils

164 There will be potential for benefits for soil health and quality.

165 The majority of land within Works Areas is currently arable land fertilised with inorganic fertiliser, as well as spread with farmyard manure and liquid slurry. Grass is not generally grown in rotation currently and organic matter levels within the soil are generally low.

166 The land will be sown to grassland and managed, including potentially by being grazed with sheep, for the duration of the operational phase. This is expected to have a positive benefit for the soils.

167 Soil is an important resource. It is estimated by the Environment Agency that the UK's soils store about 10 billion tonnes of carbon, equal to about 80 years of greenhouse gas emissions, but that an estimated 4 million hectares are at risk of compaction and 2 million ha are at risk of erosion. Intensive

[15] Town and Country Planning Act 1990, s336.

agriculture has caused arable soils to lose 40 – 60% of their organic carbon[16].

168 The report notes that significant decreases in erosion risk occur when fields change from winter cereal use to permanent grassland. Organic matter in soils acts like a sponge and can hold 20 times its weight in water. In the British Society of Soil Science[17] note they identify that "*significant long-term land use change (eg. conversion of arable land to grassland or woodland) has by far the biggest impact on soil organic carbon (SOC)*", and that soils with a higher rate of SOC are less prone to runoff and erosion, have greater water infiltration and retention, increased biological activity and improved nutrient supply.

169 Overall, therefore, for the majority of land within Work Area no 1, where arable soils will go into long-term grassland land coverage, there will be a significant benefit for soils.

170 There will be no requirement for heavy machinery to traffic soils during the operational phase. Accordingly, there will be no compacting of soils and the combination of increasing organic matter levels and lack of machinery activity will allow a natural enhancement of the soil. There will be no adverse impacts, therefore.

171 Water run-off from panels will reach all the ground under the panels. Panels come in sections and water drains down between these sections. Soils will not be harmed during the operational phase due to lack of moisture. This can be seen in Photos 17.46 and 17.47, where gaps between panels can be seen and grass growth below the panels is good.

Photo 17.46: Panels Array Showing Gaps Between Panels

[16] Environment Agency (January 2023), Summary of the State of the Environment: soils.
[17] British Society of Soil Science (2021): Science Note: Soil Carbon.

Photo 17.47: Grass Growth Below and Between Arrays

172 There is therefore the potential for improvements in one or more soil functions. These are beneficial impacts. They are, however, temporary and could be reversed once soils are returned to arable cropping following decommissioning. The effects are therefore assessed as being of low magnitude, on resources of medium or low sensitivity, resulting in **minor** or **negligible beneficial** effects, which are **not significant**.

17.8.2.3 Farm Business Implications

173 The assessment of effects on farm businesses has been undertaken following interviews with landowners or occupiers, and field walking of much of the land within Works Areas 1 and 3. Farm impact reports are set out in TA A17.3 [EN010162/APP/6.4.17.3].

174 Much of the land is owner-occupied, meaning that the landowner is also the farmer. Landowners would not have entered into land agreements unless they had concluded that there would not be significant adverse effects on the operation of their businesses.

175 The location of the landowners is shown on Figure 17.7.

176 Some of the land is occupied by tenant farmers. These occupy the land on a variety of different tenures, mostly not secure. All of the tenants are aware of the proposals and have negotiated terms, if necessary, with landowners.

177 Impacts on land farmed by contractors are generally limited, because they operate on an insecure and rapidly changing business base. Land contract farmed changes often from year to year, although some contractors farm land for many years. All effects on contractors are therefore considered to be low magnitude.

178 A description of the effects by farm is provided in Table 17.15.

Table 17.15: Description of Farm Effects

Farm Business	Description of Effects
A	Whilst this arable farm loses a significant proportion of its land, a medium magnitude impact, it is a small part-time arable farm (medium sensitivity) and will benefit from the security of income.
B	The holding will lose part of a single field. The impact will be low magnitude.
C	The land is farmed by contractors and the impact will be low magnitude.
D	The land is farmed by contractors and the impact will be low magnitude.
E	A significant proportion of this farm has been included. The farm will retain sufficient land to remain a full-time and viable holding, and will benefit from the security if income. The impact will be medium magnitude.
F	A significant proportion of this holding is included, (medium magnitude) both land owned and land rented by the farmers. A part-time farm will remain, but the farm will benefit from security of income.
G	The land is farmed by contractors and forms only a modest proportion of the overall holding. Low magnitude impact.
H	The farm will lose one field from the tenancy. The impact will be low magnitude.
I	The farm will lose a modest proportion of arable land, all lying at the southern end of the holding. The holding will benefit from the security of income. The impact will be low magnitude.
J	A significant proportion of this holding is included. The land is farmed by contractors (arable) or graziers (grassland). The effects will be low magnitude as a consequence, and the farm will benefit from the security of income.
K	A significant proportion of this part-time holding is included (medium magnitude). Only a part-time unit will remain, but the farm will benefit from the security of income.
L	Arable land will be lost, but the effects on this small farm (low magnitude) will be limited and the farm will benefit from the security of income.
M	The removal of a small proportion of arable land from this large estate will be a negligible magnitude impact.
N	The land is let to others to farm. There will be no adverse impact on the landowners. The business effect is considered for Business O, which farms the land,

Farm Business	Description of Effects
O	This farm will lose owned and rented land, but the farming operations are extensive. The impact overall will be medium magnitude. The farm will benefit from security of income.
P	The land comprises a single, off-lying small arable field, a low magnitude impact. The landowners will benefit from the security of income.
Q	This rented farm will experience a medium magnitude impact, losing arable land from the tenancy. A full-time arable farm will remain.
R	The substation and BESS will be located within a substantial dairy farm. The impact will be low magnitude.
S	The fields are rented by a substantial arable farming business. There will be a low magnitude adverse impact, but a substantial farm unit will remain.
T	The land included for Work Area 3 uses is part of a larger block. Details of the farm have not been disclosed.
U	The land involves two fields rented from an Estate, a low magnitude impact.
V	The land is rented from an Estate. The tenant did not wish to provide further information. The expected impact is low magnitude.

179 The proportionate impact is set out in Table 17.16.

Table 17.16: Summary of Effects on Farms

Farm	Hectarage	Land Take	% Land Take
Farm Business A	Approx. 63 ha	26.3 ha	42
Farm Business B	Approx. 285 ha	5.0 ha	2
Farm Business C	Approx. 400 ha farmed (owned and rented) and 200 ha contract farmed	38.9 ha	10% of land owned/rented, 6% of land farmed
Farm Business D	Approx. 97 ha	24.1 ha	25
Farm Business E	Approx. 380 ha	123.6 ha	33
Farm Business F	Approx. 660 ha	224 ha	34
Farm Business G	Approx. 1,510 ha	70.4 ha	5
Farm Business H	110 ha	9.2 ha	8
Farm Business I	Approx. 650 ha plus 200 ha contract farming	62.7 ha	10% of land owned and

Farm	Hectarage	Land Take	% Land Take
			rented, 7% of land farmed
Farm Business J	Approx. 350 ha	279.8 ha	80
Farm Business K	Approx. 85 ha	49.1 ha	58
Farm Business L	Approx. 100 ha	17.5 ha	18
Farm Business M	Approx. 2,000 ha	20.7 ha	1
Farm Business N	Approx. 155 ha	85.4 ha	55
Farm Business O	Approx. 1,600 ha	173.7 ha	11
Farm Business P	Approx 105 ha	1.6 ha	2
Farm Business Q	Approx 345 ha	61.0 ha	18
Farm Business R	Not provided	25.1 ha	Not known
Farm Business S	Approx 1,200 ha	170.7 ha	14
Farm Business T	Not known	22.2	Not known
Farm Business U	Not known	56.3	Not known
Farm Business V	Not known	26.1	Not known

180 The areas identified in Table 17.16 as within the Development will not be lost to farming. These areas will potentially be grazed with sheep. Their management could remain under the control of the current farmers or could be undertaken by others. Whether they choose to manage the sheep themselves, or let others manage the sheep (as they do with some of the root crops currently), the overall farming activities of the land within Works Area 1 will not be significantly reduced in size.

181 There will potentially be benefits for the local labour market, because sheep production requires greater labour input than arable farming. The Pocketbook for Farm Management[18] estimates of labour required for cereals and lowland sheep production are compared in Table 17.17. This shows that sheep production requires more labour per hectare than cereals. Therefore, overall agricultural labour needs will not reduce.

Table 17.17: Labour Estimates

Crop	Hours/ha/year
Winter cereals, including hauling straw	12.5
Sheep – 4 hours per ewe at 6 ewes/ha	24.0

[18] John Nix Pocketbook for Farm Management 2025, The Andersons Centre (September 2024)

182 Therefore the effects on farm businesses are adverse (in terms of farm structure). The farms will benefit from income from the energy generated by the solar PV panels, together with income from farming sheep. Coupled with these benefits, the overall impact of this diversification is considered to be as set out in Table 17.18. This identifies the sensitivity of the holding (of which most are full-time units of medium sensitivity in Table 17.2) and the magnitude of the impact. The largest impacts are of medium magnitude (Table 17.3). A medium magnitude impact on a medium sensitivity resource results in an effect of **minor adverse** significance, which is **not significant**.

183 In four cases the information was not fully provided. In those cases professional judgement has been used. These are identified in Table 17.18 by the use of italics and denoted by reference (E).

Table 17.18: Summary of Farm Impact Assessment

Farm Business Reference	Sensitivity	Magnitude	Significance
A	Medium	Medium	Minor
B	Medium	Low	Minor
C	Medium	Low	Minor
D	Low	Low	Negligible
E	Medium	Medium	Minor
F	Medium	Medium	Minor
G	Medium	Low	Minor
H	Medium	Low	Minor
I	Medium	Low	Minor
J	Medium	Low	Minor
K	Medium	Medium	Minor
L	Medium	Low	Minor
M	Medium	Negligible	Negligible
N	Low	Low	Negligible
O	Medium	Medium	Minor
P	Low	Low	Negligible
Q	Medium	Medium	Minor
R	Medium	(E) *Low*	*Minor*
S	Medium	Low	Minor
T	Medium	(E) *Low*	*Minor*
U	Medium	(E) *Low*	*Minor*
V	Medium	(E) *Low*	*Minor*

184 The analysis identifies that the effects on farm businesses are:

- 14 no. effects of **minor adverse** significance, which is **not significant**;
- 4 no. effects of **negligible** significance, which is **not significant**; and
- 4 no. effects not known but using professional judgement the effects are assessed to be minor adverse, which is **not significant**.

17.8.2.4 Food Production and Economic Implications

185 In their Scoping Opinion the Planning Inspectorate requested that the implications for land use and food production should be considered. This section of the Chapter considers agricultural land use implications specifically in the context of the outputs of agricultural land in terms of food, industrial or other benefits. The section reviews:

- The requirement to use agricultural land for food production;
- The importance of climate change and its effects on food production;
- Food security considerations and the Government's position;
- The effects on food and other production of the Development;
- The importance of those effects in a local and national context; and
- Leading to an assessment of the significant of the effects.

186 **The Requirement to Use Land for Food Production**.

187 The use of land for "agriculture", which is defined in the Town and Country Planning Act 1990 (s336), is not "development" (as defined in s55 (2) (e). Planning consent is not required to use land for agriculture, or to change between any different agricultural enterprises.

188 The definition of agriculture allows a wide range of agricultural uses. Some relate to food production, others do not. There is no requirement to use land for food production, or to use it for any particular intensity of use. It follows that a landowner can do what they wish with their land within the definition of agriculture. For example, the landowner could rewild and graze it at a low intensity, or graze it with horses, or plant short-rotation coppice, or plant ancillary woodland, or fallow it. Food production is not an obligation.

189 In practice, there is no specific incentive to use land for food production, other than for normal commercial gain. Government incentives are primarily aimed at non-food benefits from land. Agri-environmental land use initiatives such as the Countryside Stewardship Scheme or the Sustainable Farming Initiative fund the reversion of arable land to non-food uses. In the June Census, at 1st June 2024, some 305,000 ha of arable land was being used for non-food biodiversity management[19].

190 In context, the Written Ministerial Statement on "Solar and Protecting our Food Security and Best and Most Versatile Agricultural Land"[20] sets out that "*even in the most ambitious scenarios [solar] would still occupy less than 1% of the UK's agricultural land*". As recorded earlier, currently 8.7 million hectares of land is in active agricultural use. 1% of that is 87,000 hectares,

[19] Department for Environment, Food and Rural Affairs (26 September 2024), Agricultural Land Use in England at 1 June 2024.
[20] Department for Energy Security and Net Zero (15 May 2024) Solar and Protecting our Food Security and BMV Land.

which can be assessed in context with over 300,000 ha being funded for non-food uses.

191 **The Importance of Climate Change**.

192 In a Statement to Parliament on 18 July 2024[21] the Secretary of State for Energy Security and Net Zero stated that "*The biggest threat to nature and food security and to our rural communities is not solar panels or onshore wind; it is the climate crisis, which threatens our best farmland, food production and the livelihoods of farmers*".

193 **Food Security Considerations**.

194 The UK is currently about 75% self sufficient in indigenous foods, ie foods we can grow. This has improved slightly since 2021. In the United Kingdom Food Security Report 2024[22], Executive Summary, the key performance takeaway on UK production is as follows: "*The UK's overall balance of trade and production is broadly stable. The UK continues to source food from domestic production and trade at around an overall 60:40 ratio.*

Key statistic: The production-to-supply ratio was at 62% for all food and 75% for indigenous foods (meaning those that can be grown in the UK) in 2023, showing a small increase from 61% and 74% in 2021. This is a continuation of the broadly stable trend seen in recent years".

195 In respect of the crops that can be grown, the UK is self-sufficient or near self-sufficient in cereals, oilseeds, other non-vegetable arable crops, milk and sheep meat. The UK produced approximately 20 million tonnes of cereals in 2024, for example[23]. A Government Statement at the end of 2022[24] confirmed that there are no food security concerns at the present time. The Food Security Report 2024 ([22], ibid) identified a small improvement since 2022 to 74% self-sufficiency in the products we can produce in the UK.

196 As a nation we buy and sell agricultural produce to suit our tastes. We have done so for centuries. That does not mean we cannot survive from what we produce. This can be illustrated by reference to the UK Food Security Report 2021 (update of December 2022[25]), which set out the following:

'However, from a purely calorific perspective, the (below average) grain yield in 2020 of 19 million tonnes would be sufficient to sustain the population. It is equivalent to 283kg per person, 0.8 kilos per day. A kilo of wheat provides 3,400 calories (and barley slightly more at 3520 calories), making 0.8 kilos of grain over 2,600 calories, compared to recommended calorie intake of 2 to 2,500 for adults. From these figures it is easy to demonstrate that, even without accounting for other domestic products like potatoes, vegetables, grass-fed meat and dairy, and fisheries, current UK

[21] Hansard Volume 752: debated on Thursday 18th July 2024.
[22] United Kingdom Food Security Report 2024: Theme 2, UK Food Supply Sources, Defra (11 December 2024)
[23] https//www.gov.uk/government/statistics/cereal-and-oilseed-rape-production/cereal-and-oilseeed-production-in-the-united-kingdom-2024 Accessed March 2025
[24] Food Supply and Food Security, Defra (9 December 2023)
[25] United Kingdom Food Security Report 2021, Defra (22 December 2022)

grain production alone could meet domestic calorie requirements if it was consumed directly by humans in a limited choice scenario'.

197 Trends in output for different sectors (e.g., cereals, fruit and vegetables, milk, potatoes, red meat, poultry meat) reflect world economics, not the ability of the UK to produce food.

198 There is no concern from Government about food security, and no requirements or incentives to manage land for food production. The land use change from agriculture (only some of which is for food) to a mix of energy production and agriculture will not result in any significant adverse environmental or economic effects.

199 **The Economic and Other Effects**.

200 NPS EN-3 and the NPPF (2023) advise that the economic and other considerations of the use of BMV land should be considered. To assess the economic benefits of BMV land, one methodology is to compare the economics of BMV land to poorer quality land, assuming that such land is used for solar panels as an alternative.

201 There is no statistical data that provides yields or economic performance of BMV compared to non-BMV land. Accordingly, only an assessment based on professional judgement is possible, assuming that BMV land falls into the "high" performance, and non-BMV land falls into the "average" performance, in agricultural budget books. On this basis, the incremental increase in food production if BMV land is used is shown in Table 17.19. This assumes a wheat and barley production, rather than the grassland/maize/cereals production currently grown over the farms.

Table 17.19: Crop Production Budgets

Crop	Average Yield	High Yield	Difference
Winter feed wheat	8.3 t/ha	9.5 t/ha	1.2 t/ha
Winter feed barley	7.3 t/ha	8.4 t/ha	1.1 t/ha
Winter oilseed rape	3.5 t/ha	4.0 t/ha	0.5 t/ha
Lowland sheep ewes	9 ewes/ha	10 ewes/ha	1 ewe/ha

Nix Pocketbook for Farm Management 55th Edition[26]

202 Across the BMV agricultural land within Works Areas 1 and 3 this would, if the area was all used for food production, have the following implications for cereal/ oilseed production. This assumes 100% wheat, being the worst-case (i.e., largest) effect. This is shown in Table 17.20.

Table 17.20: Difference in Production (assuming total area 1,600 ha and all wheat cropping).

Crop	Change in Yield	Area (ha)	Change (t)
Winter feed wheat	1.2 t/ha	1,600	1,920

[26] John Nix Pocketbook for Farm Management, The Andersons Centre (September 2024)

203 The use of agricultural land for the deployment of Solar PV modules is assumed to be accepted. Consequently the assessment focuses not on the absolute production, but on the incremental production were poorer quality land to be used elsewhere rather than the BMV land within Works Areas 1 and 3. On that measure the incremental reduction in production should the Development be moved to poorer quality land elsewhere would be under 2,000 tonnes of wheat per annum.

204 The implications for food production are limited. Much agricultural output is destined for animal feed or industrial use so that the increased use of land for growing sheep, the meat from which will directly go to human food, will be a benefit.

205 **The Importance of These Effects in a Local and National Context**.

206 The reduction in production of circa 2,000 tonnes of cereals can be compared to the UK cereal production in 2024 of just under 20 million tonnes[27].

207 The Utilised Agricultural Area in England is 8.7 million ha ([3], ibid). Natural England estimate that 42% of this is BMV (TIN049, [1] ibid). That equates to 3.7 million ha of BMV agricultural land in England.

208 The total cropping area in England at June 2024 was just over half (57%) of agricultural land. In England the total croppable area at 1 June 2024 was 4,968,220 hectares. At the same date the total "uncropped arable land" was 580,662 ha. This includes all arable land not in production, such as bare fallow and land used for agri-environmental benefits.

209 In the East Midlands area 70% of the 1,172,000 ha of farmed area is arable[28]. The importance of the land use change, which is a change from arable to grassland farming potential, is not significant on a national or regional scale.

210 **Assessing the Significance of Effects**. The breakdown of agricultural land use in a particular area can be recorded, but there are no powers or incentives to influence that land use. On a national and regional basis the implications of the use of BMV in this case for solar PV arrays and potential sheep production, rather than for arable crop production, is negligible. Assuming that solar deployment needs to take place on agricultural land, the incremental difference is less than 2,000 tonnes.

211 In respect of food production, the impact is temporary and of low magnitude. A low magnitude impact on a resource of low sensitivity (arable production) results in an effect of **negligible** significance, which is **not significant**. In respect of the local agricultural economy, the impact is beneficial, but at a negligible scale. A negligible benefit on a low sensitivity resource is overall a **negligible** effect, which is **not significant**.

[27] Department for the Environment, Food and Rural Affairs (7 January 2025), Cereal and Oilseed Production in the United Kingdom 2024.
[28] Department for the Environment, Food and Rural Affairs (31 October 2024), Agricultural Facts: East Midlands Region.

17.8.2.5 Summary of Operational Phase Effects

212 Therefore it can be concluded that in respect of operational effects:

- There will be no further effects on agricultural land quality, therefore no change which is a **negligible** significance effect, which is **not significant**;
- There will be a benefit on soil health and its carbon-holding benefits, but this is a temporary low magnitude benefit on resources of medium or low sensitivity, resulting in an effect which will be **minor or negligible beneficial**, which is **not significant**;
- The effects on occupying farm businesses are mostly of medium or low magnitude, on holdings of low sensitivity, leading to overall effects of **minor or negligible** significance, which is **not significant**; and
- The impacts on food production and the wider local agricultural economy are of negligible magnitude, on low sensitivity resources, and overall therefore of **negligible** significance, which is **not significant**.

17.8.3 Decommissioning Phase

213 The decommissioning phase will not have any significant effects on agricultural land or soils, nor on farm businesses.

214 Measures to mitigate potential effects on land and soil quality will be secured through the final SMP and final DRP, broadly in line with the oSMP (TA A17.2 [EN010162/APP/6.4.17.2]).

215 Where fixed infrastructure or cables are to be removed, they will be removed in suitable conditions. If cables are being removed the works will include careful removal of topsoil and subsoil, to be stored in segregated piles, followed by reinstatement. Fixed infrastructure bases will be removed, membranes removed, and the ground loosened and topsoil replaced.

216 The removal of the Solar PV modules will involve the disassembly of the panels and framework, followed by mechanical removal of the piles.

217 The soils across the Solar PV module area will then be loosened with normal agricultural machinery, and returned to the farmers in a condition suitable for continued agricultural use.

218 Once the Solar PV modules have been removed the bases for the infrastructure can be removed. This will involve removing the crushed stone bases and matting, loosening the soil to remove compaction, then returning topsoil to the areas. The topsoil will then be worked with normal agricultural machinery to create a tilth suitable for return to the landowner.

219 The decommissioning of the substation and BESS will result in the removal of all above and below ground equipment and materials, and the restoration of the land back to the pre-construction land quality.

220 Any adversely affected underfield drainage will be repaired, with replacement drainage schemes installed as required.

221 Following decommissioning, the land will be returned to the landowners in a condition suitable for agricultural use.

222 In terms of **agricultural land**, the works will involve a further temporary period of disturbance on land of high or medium sensitivity. The magnitude of impact will be low, and the consequent effect will be **minor adverse**, which is **not significant**.

223 In terms of **soils**, these are mostly of medium sensitivity and the works will be temporary and short-term, leading to a low magnitude impact. This will result in **minor adverse** effects, which are **not significant**.

224 **Agricultural businesses** will not be adversely affected by decommissioning works, other than any short-term disturbance to areas grazed. This will be termporary. Therefore the magnitude of impact is low, on businesses of medium or low sensitivity, resulting in **minor** or **negligible adverse** effects, which are **not significant**.

17.8.3.1 Summary of Decommissioning Effects

225 Decommissioning can be timed to be carried out when soil conditions are suitable, as set out in the oSMP, and will not have any adverse agricultural effects. Thereafter, the land will be available for continued agricultural use. The decommissioning effects are of **minor** or **negligible adverse** significance, which is **not significant**.

17.9 MITIGATION MEASURES AND RESIDUAL EFFECTS

226 No mitigation measures beyond those set out in the oSMP [EN010162/APP/6.4.17.12] are required.

227 The residual effects therefore remain as set out in section 17.6:

(i) Construction Phase:
- Agricultural land quality: There will be temporary disturbance to less than 20 ha of BMV land, such that the impact is low on resources of high sensitivity, resulting in **minor adverse** effects, which are **not significant**; There will potentially be a permanent loss of up to 4.5 ha of subgrade 3a BMV land, which is a low magnitude impact on a resource of high sensitivity, resulting in a minor adverse effect, which is **not significant**;
- Soils: The soils are mostly of medium sensitivity, and the impacts are temporary and of low magnitude, resulting in effects of **minor adverse** significance, which are **not significant**;
- Farm businesses and economics: The construction works have only low or negligible impacts on farms of medium or low sensitivity resulting in effects of **minor** or **negligible** significance, which are **not significant**.

(ii) Operational Phase:
- Agricultural land quality: Any impacts will be of negligible magnitude, on resources of high or medium sensitivity, resulting in effects of **negligible** significance, which is **not significant**;
- Soils: There will be benefits across large areas within Works Areas 1, where arable land will go into long-term grassland. The benefit is, however, temporary and could be reversed on decommissioning. Accordingly the benefit is of low magnitude, on resources mostly of

medium sensitivity, resulting in effects of **minor** significance, which is **not significant**;

- Farm businesses and economics: 22 farm businesses are affected, with different degrees of impact. None are significant, however, and the overall effects are of **minor** or **negligible** significance, which is **not significant**;
- Food production: There will be a negligible impact on food production nationally or regionally, which is **not significant**.

(iii) Decommissioning Phase:

- Agricultural land quality: There will be some short term, temporary and reversible impacts, and the overall effects will be **minor adverse**, which is **not significant**;
- Soils: There will be some short term, temporary and reversible impacts, and the overall effects will be **minor adverse**, which is **not significant**;
- Farm businesses and economic effects: Disturbance to farming operations will be short-term and the effects will be **minor** or **negligible adverse**, which is **not significant**.

17.10 CUMULATIVE AND IN-COMBINATION EFFECTS

228 The approach to assessing cumulative effects is outlined in Chapter 2, Environmental Impact Assessment [EN010162/APP/6.2.2]. Cumulative developments to be taken forward to Stages 3 and 4 (assessment) are set out in TA A2.1 [EN010162/APP/6.4.2.1]. The stage 3 and 4 assessments for cumulative effect on agricultural land are assessed in this Section.

229 As set out in TA A2.1, the assessment considers recent NSIP applications in Nottinghamshire and districts within Lincolnshire that share a boundary with Newark and Sherwood District (as agreed with Newark and Sherwood Council), including those consented.

17.10.1 Baseline Conditions

230 The available or estimated information about the baseline land quality of the various NSIP cumulative sites is set out in Table 17.21. This sets out the data on the use of, and where recorded any loss of, agricultural land from the schemes assessed. It provides factual data and a proportion of BMV for each project.

Table 17.21: Baseline ALC Information

Project	PINS ref.	Developer/development	District	ALC data
West Burton Solar Project	EN010132	West Burton Solar Project Limited >50MW solar farm	West Lindsey	Grade 1= 17.6ha Grade 2= 9.5ha Subgrade 3a= 172.4ha Subgrade 3b= 557.0ha Non-agricultural = 1.3ha Total = 757.8ha BMV % (26.3%)
Gate Burton Energy Park	EN010131	Gate Burton Energy Park Ltd 500 MW solar farm	West Lindsey	Subgrade 3a= 73.6ha Subgrade 3b= 548.9ha Non-agricultural = 18.2ha Estimated Subgrade 3b = 4.5ha Total = 645.2ha. BMV % (11.4%)
Steeple Renewables	EN010163	Renewable Energy Solutions (RES) 400 MW solar farm	Bassetlaw	Grade 1= 56.36ha Grade 2= 153.57ha Subgrade 3a= 430.32 Subgrade 3b= 81.76ha Total 722ha BMV % (88.7%)
Cottam Solar Project	EN010133	Cottam Solar Project Limited >50MW solar farm	West Lindsey	Grade 2 = 6.1ha Subgrade Grade 3a= 42ha

Project	PINS ref.	Developer/development	District	ALC data
				Subgrade Grade 3b= 1118.3ha Not surveyed= 13.3ha Total = 1,179.7ha BMV % (4.2%)
Tillbridge Solar Project	EN010142	Tillbridge Solar Limited >50MW solar farm	West Lindsey	Grade 2 = 8ha Subgrade 3a= 103ha Subgrade 3b = 1218ha Grade 4 = 1ha Total = 1,330ha BMV % (8.3%)
Springwell Solar Farm	EN010149	Springwell Energy Farm Limited >50MW solar farm	North Kesteven	Grade 2 = 604ha Subgrade 3a = 377.5ha Subgrade 3b= 494.7ha Total = 1,476.2ha BMV % (66.5%)
Heckington Fen	EN010123	Ecotricity (Heck Fen Solar) Limited >50MW solar farm	North Kesteven	Grade 1 = 58ha Grade 2= 39ha Subgrade 3a= 160ha Subgrade 3b= 265ha Non-agricultural= 2ha Total = 524ha BMV % (49%)

Project	PINS ref.	Developer/development	District	ALC data
Lincolnshire Reservoir	WA010003	Anglian Water New reservoir proposal	North Kesteven	No ALC data – still at pre-application stage.
Beacon Fen	EN010151	Beacon Fen Energy Park Limited >50MW solar farm	North Kesteven	Grade 2= 16.58ha Subgrade 3a= 22.1ha Subgrade 3b = 6.18ha Not surveyed= 0.02ha Other= 0.45ha Total = 45.3ha BMV % (85.4%)

17.10.2 Cumulative Effects of Loss of BMV Land

231 These schemes involve the use of considerable areas of land, including the use of approximately 2,350 ha of BMV land within Nottinghamshire and Lincolnshire. These are principally solar scheme proposals and accordingly will be wholly or mostly reversible, and accordingly they will represent a temporary impact, which is a low magnitude impact on a resource of high sensitivity, which results in a **low magnitude** effect, which is **not significant**.

232 The Lincolnshire Reservoir is likely to be a permanent impact and may result in a significant adverse effect on its own due to the loss of BMV land , but the land quality details are not yet published.

233 As set out in Table 17.14 and described in section 17.6.1.6, across England there is an estimated 3,700,000 hectares of BMV land. The BMV within the Development, excluding the Works No. 2, Cables (which will not be affected other than short-term), represents a reduction of 0.028% which is not significant.

234 If the other NSIP solar schemes were to be developed, the estimated BMV in England would be 3,698,000 ha. The Development represents a reduction of 0.028%, which is not significant.

235 The cumulative effect is **not significant**.

236 In respect of cumulative impacts, four recent NSIP decisions have considered the effects on agricultural land and on food and other benefits. They have concluded as follows:

- EN010127 Mallard Pass Solar Farm. There are 360 ha of BMV within the Order Limits. In the Secretary of State's decision letter of 12th July 2024 he reviewed (in isolation and in combination) the impacts on food production (sections 4.87 to 4.103). In 4.100 he concluded that the project and others in the region "*would represent around 0.5% of the BMV land across Lincolnshire and Rutland. The Secretary of State agrees with the ExA that the impact of the Proposed Development in relation to food production in the national context is negligible*";
- EN010133 Cottam Solar Project. The quantum of BMV in this project is modest, but the Secretary of State's decision of 5th September 2024 concluded that the loss of arable production from the 1,160 ha site is a negative impact but "*should be classed as "little negative weight" rather than "significant negative weight*";
- EN010123 Heckington Fen Solar Park. The site includes 257 ha of BMV and the Secretary of State's key conclusion on food related matters is that "*In agreement with the ExA, the Secretary of State considers that the above factors mean that the Proposed Development will cause only minor adverse effects to land use and soil*";
- EN010132 West Burton Energy Park, consented on 24th January 2025. The "*Secretary of State considers the fixed-term, reversible loss of land for food production is a negative impact of the Proposed Development, but the impact is small when considered against the total agricultural land available for food production in Lincolnshire*".

237 The additional effects of the smaller solar farm proposals identified by the Council will add to the cumulative area of land being used, but they will not result in any significant change to the magnitude of the assessment.

17.10.3 Summary

238 Overall, therefore, there are no significant adverse effects on agricultural land, the agricultural economy or food production, and effects on soils have been minimised through application of an outline Soil Management Plan [EN010162/APP/6.4.17.2].